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Cephenniini (Coleoptera: Scydmaenidae) of Doi Inthanon and Khao Yai National Parks, Thailand

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Abstract This paper provides the first record of Cephenniini from Thailand based on the materials collected in Doi Inthanon and Khao Yai National Parks. Newly described species are: *Cephennodes* (*Cephennodes*) *frontocarinatus* sp. nov., *C.* (*C.*) *rhinoceros* sp. nov., *C.* (*C.*) *multisaetosus* sp. nov., *C.* (*C.*) *praemorsus* sp. nov., *C.* (*C.*) *falcipenis* sp. nov., *C. oblongopunctatus* sp. nov., and *Cephennomicrus inthanonensis* sp. nov. Habitus and aedeagi of all described species are illustrated; relationships of the new species of *Cephennodes* to known species groups are discussed.

Key words: Coleoptera, Scydmaenidae, Cephenniini, *Cephennomicrus*, *Cephennodes*, Oriental, Thailand, taxonomy, new species.

Introduction

Nearly a hundred described species of the Scydmaenidae are known to occur in Thailand. They belong only to three tribes: Cyrtoscydmini (ca. 70 species), Scydmaenini (ca. 25 species), and Eutheiini (1 species). Most of them were described or reported to occur in Thailand by Herbert FRANZ in papers that dealt with genera *Eutheia* STEPHENS, *Euconnus* THOMSON, *Horaeomorphus* SCHAUFUSS, *Microscydmus* SAULCY et CROISSANDEAU, *Siamites* FRANZ, *Syndicus* MOTSCHULSKY, and *Scydmaenus* LATREILLE (FRANZ, 1983; 1985; 1989). Later, eight species of *Syndicus* were described from Thailand by JAŁOSZYŃSKI (2004). The majority of scydmaenid beetles known from this country belong to *Euconnus* and *Scydmaenus*, together accounting for over 80% of the species. Despite a high species richness and diversity of the Cephenniini in virtually all humid forests in the Oriental region, not even a single species of this tribe has been recorded from Thailand. Cooperative fieldwork in 2006 of the second author of the present paper, in two national parks in Northern (Doi Inthanon NP) and Eastern Thailand

(Khao Yai NP), yielded a number of interesting Cephenniini. Six species of *Cephennodes* Reitter (all belonging to the nominotypical subgenus) and a single species of *Cephennomicrus* Reitter were present in this material; these taxa are described below.

The measurements and abbreviations used in text are as follows: body length (BL) is a sum of lengths of the head, pronotum and elytra measured separately; length of head (LH) was measured from a hypothetical line joining posterior margins of eyes to anterior margin of the frontoclypeal area; width of head (HW) includes eyes; length of antennae (AnL) was measured in ventral view; length of pronotum (PL) was measured along midline; width of pronotum (PW) is maximum; length of elytra (EL) was measured along suture, from a hypothetical line joining the humeral denticles to the apex; width of elytra (EW) is maximum, combined; elytral index (EI) is length divided by combined width. All measurements are given in millimeters. The type material is deposited in the National Museum of Nature and Science, Tokyo, Japan (NSMT), and in the private collection of the first author (PCPJ). All specimens were provided with red (holotypes) or yellow (paratypes) printed labels with the species name followed by "Jałoszyński et Nomura" "det. P. Jałoszyński, '08", and the word "HOLOTYPUS" or "PARATYPUS", respectively.

Taxonomy

Genus *Cephennomicrus* Reitter

Cephennomicrus Reitter, 1907: 297, type species: *Cephennomicrus perpunctillum* Reitter, 1907 (monotypy).

Neseuthia Scott, 1922: 201; type species: *Neseuthia typica* Scott, 1922 (orig. des.); synonymized by Jałoszyński (2008).

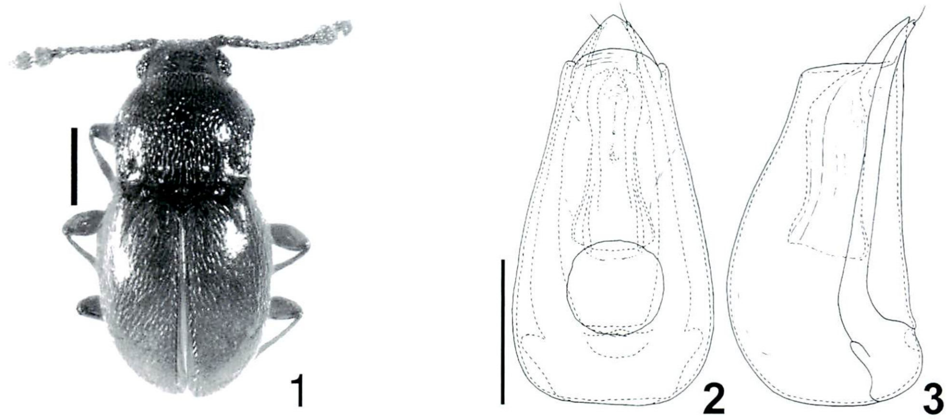
Cephennomicrus inthanonensis sp. nov.

(Figs. 1–3)

Diagnosis. This inconspicuous species differs from all other members of the genus in the following combination of characters: head in male non-modified; frontal glands present; antennal club large and two-segmented; punctures on pronotum dense and strong, contrasting with very fine and indistinct punctures on elytra; setae of dorsum very short and dense, with two additional long lateral setae located near humerus and near middle of each elytron; and moderately elongate, symmetrical aedeagus with subtriangular apex distinctly separated from median lobe, and lightly sclerotized tubular internal armature occupying apical half of median lobe.

Description. Body elongate, relatively slender, strongly convex, moderately light brown, covered with light brown vestiture.

Male (Fig. 1). BL 0.90. Head widest at strongly convex, large and coarsely faceted eyes, HL 0.10, HW 0.24; vertex and frontoclypeal area convex, vertex with pair of small but well visible ocelli, frons with distinct, circular frontal glands each located near antero-internal margin of eye and distinctly larger than single ommatidium; supraantennal tubercles small and indistinctly raised. Punctures on frons and vertex very small but discernible under magnification 40×, moderately sharply marked, dense, separated by spaces as long as or slightly longer than their punc-



Figs. 1–3. *Cephennomicrus inthanonensis* sp. nov. 1, dorsal habitus of male; scale bar: 0.2 mm. Figs. 2–3, aedeagus in ventral (2) and lateral (3) views; scale bar: 0.05 mm.

ture diameters; setae barely noticeable, very short, sparse and nearly recumbent. Antennae moderately long, with very slender flagellum and rapidly, strongly enlarged two terminal antennomeres forming large club, AnL 0.40; antennomere I nearly twice as long as broad; II slightly narrower and shorter than I, 1.6× as long as broad; III distinctly narrower than II, slightly broader than long; IV-V equal in length and width, each as broad as II but slightly longer, as long as broad; VI as broad as V but slightly longer than broad; VII as broad as VI but minimally longer, 1.2× as long as broad; VIII slightly narrower and shorter than VII, slightly longer than broad; IX slightly broader and much longer than VIII, 1.3× as long as broad; X slightly longer and much broader than IX, distinctly broader than long; XI slightly narrower and slightly longer than X, about as long as broad.

Pronotum in dorsal view approximately subquadrate in shape, broadest between middle and anterior third, PL 0.28, PW 0.35; anterior margin strongly rounded; lateral margins distinctly microserrate, rounded in anterior third, slightly constricted near middle and nearly straight in posterior third, convergent toward obtuse hind angles; posterior margin with three very shallow emarginations; base of pronotum with two lateral pairs of small but deep and very distinct pits, internal pair is connected by transverse groove. Punctures on disc moderately large, very distinct, sharply marked and deep, slightly elongate longitudinally, those in median part are separated by spaces slightly shorter than their width, punctures are gradually smaller, less elongate and denser toward anterior margin of pronotum and larger, more elongate and sparser toward posterior margin; setae short but distinct, dense, nearly recumbent.

Elytra oval, elongate, broadest slightly before middle, EL 0.53, EW 0.40, EI 1.31; humeral calli prominent, each delimited from adsutural part of elytron by distinct, elongate impression; apices of elytra separately rounded. Punctures on elytra very indistinct, elytra appear impunctate under magnification 40×; vestiture similar to that on pronotum, with additional pair of long lateral setae on each elytron located near humerus and near middle. Hind wings well developed.

Metaventrite very finely punctate.

Legs moderately long and slender, without peculiar characters.

Aedeagus (Figs. 2, 3) 0.13 mm in length, moderately elongate, broadest near base, with distinctly separated, subtriangular apex of median lobe; internal armature composed of large, tubular, lightly sclerotized structure occupying apical half of median lobe; parameres long and slender, each bearing single apical seta, base of parameres with distinct lateral lobes.

Female. Unknown.

Holotype: male, white printed label "TL: nr. 2nd Gate (1,600 m), Doi Inthanon NP, [N-THAILAND], 19. X. 2006, S. NOMURA leg." (NSMT).

Distribution. N Thailand: Doi Inthanon National Park.

Etymology. Locotypical; after the type locality, Doi Inthanon.

Genus *Cephennodes* REITTER

Cephennodes REITTER, 1883: 420, type species: *Cephennodes simonis* REITTER, 1883 (monotypy).

Subgenus *Cephennodes* s. str.

Chelonoidum STRAND, 1935: 285 (replacement name for *Chelonoides* CROISSANDEAU, 1894); synonymized by JAŁOSZYŃSKI (2007).

Chelonoides CROISSANDEAU, 1894: 418 (as subgenus of *Cephennium*; preoccupied, not *Chelonoides* HITCHCOCK, 1858), type species: *Cephennium turgidum* REITTER, 1877: 292 (monotypy).

Coatesia LEA, 1915: 230; type species: *Coatesia lata* LEA, 1915: 230 (monotypy); synonymized by JAŁOSZYŃSKI (2008).

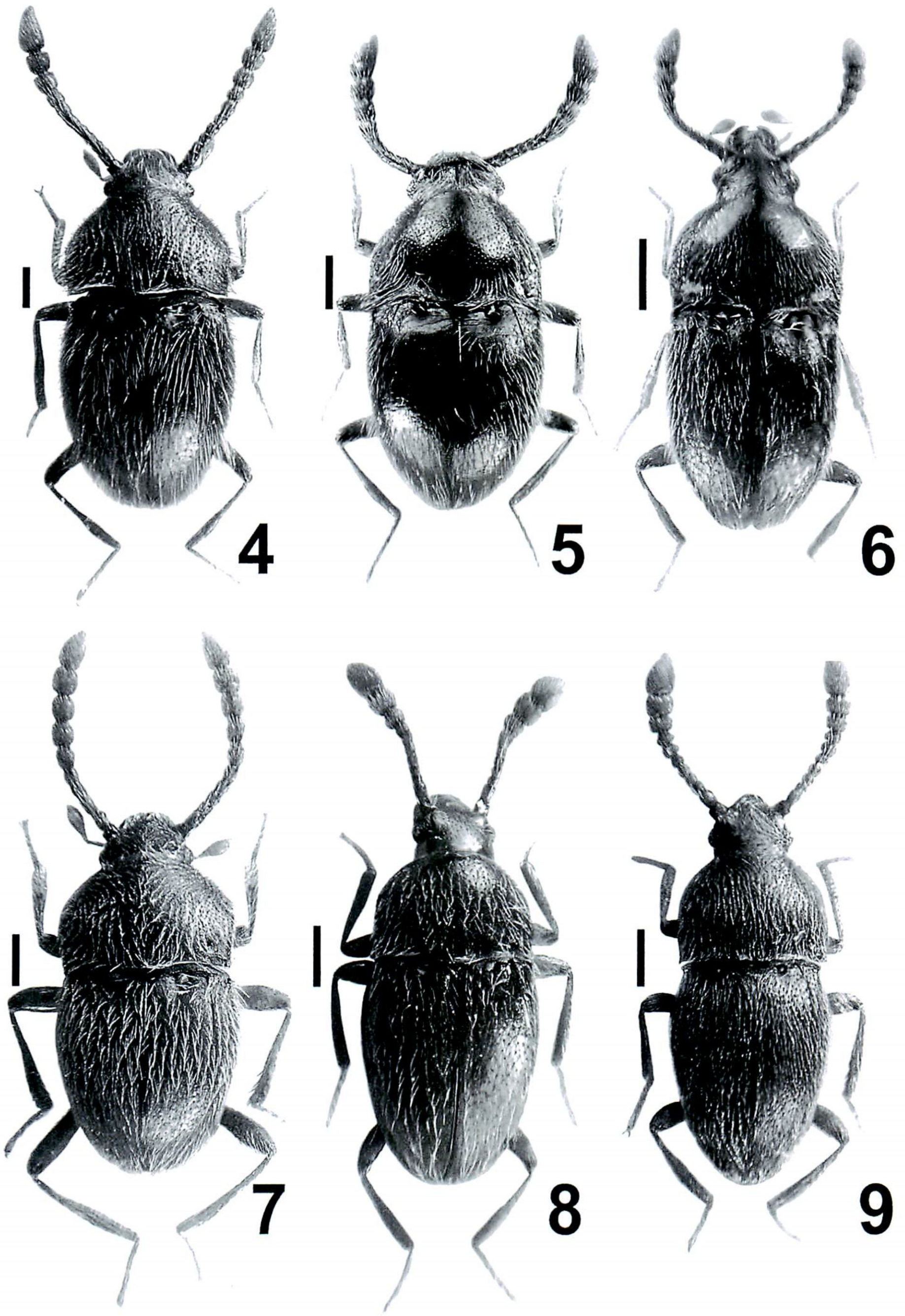
Cephennodes (*Cephennodes*) *frontocarinatus* sp. nov.

(Figs. 4, 10, 11, 14, 15)

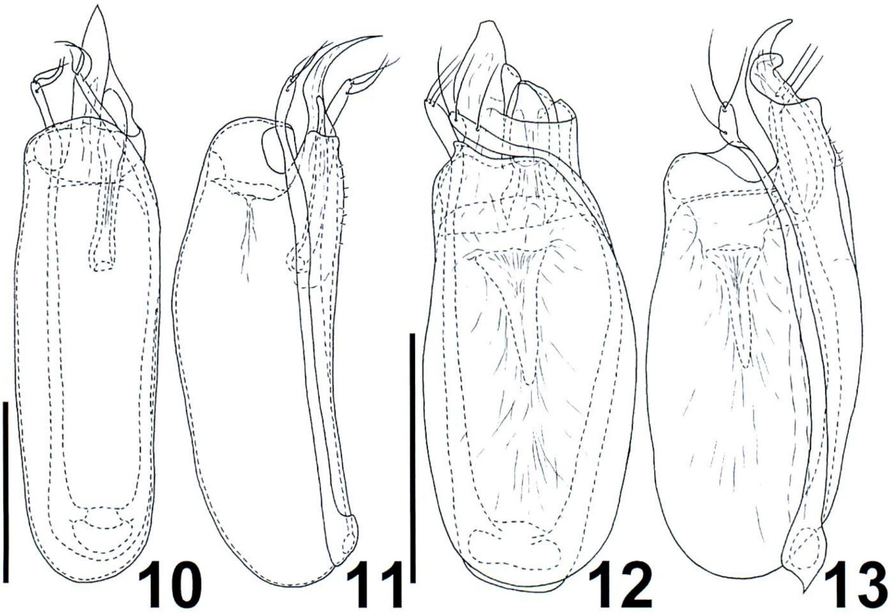
Diagnosis. This species is a typical member of the *impressifrons* species group; it can be distinguished from all other species by male dimorphic characters located on head, and unique aedeagus: anterior part of frons slightly but distinctly impressed and delimited from clypeus by transverse, low, and broadly U-shaped carina indistinctly delimited from surrounding areas; aedeagus representing a variant of *simonis*-type, with very long and slender median lobe and slender, weakly curved apical hook.

Description. Body moderately stout, very weakly constricted between pronotum and elytra, strongly convex, dark brown, covered with light brown vestiture.

Male (Fig. 4). BL 1.82 (1.78–1.85). Head widest at strongly convex but relatively small, coarsely faceted eyes, HL 0.27 (0.25–0.30), HW 0.44 (0.43–0.45); vertex and posterior part of frons regularly convex, vertex with pair of barely visible tubercles; anterior part of frons slightly but distinctly impressed and delimited from clypeus by transverse, low, broadly U-shaped carina indistinctly delimited from surrounding areas; supraantennal tubercles weakly raised. Punctures on vertex and posterior part of frons large, sharp, deep and dense, but distributed unevenly, those in middle are separated by spaces equal to 0.8–2× their diameters, anterior part of median impression and median part of transverse carina with dense, small punctures; setae on dorsal surface of head long and dense, longest setae are distributed on sides of transverse carina and they are directed anteriorly and distinctly curved toward middle. Antennae long, compact, AnL 0.91 (0.88–0.95), with slender and very indistinctly delimited, 5-segmented club; anten-



Figs. 4–9. Dorsal habitus of male. *Cephennodes frontocarinatus* sp. nov. 4; *C. rhinoceros* sp. nov. 5; *C. praemorsus* sp. nov. 6); *C. multisaetosus* sp. nov. 7; *C. falcipenis* sp. nov. 8; and *C. oblongopunctatus* sp. nov. 9. Scale bar: 0.2 mm.



Figs. 10–13. Aedeagus in ventral (10, 12) and lateral (11, 13) views. 10–11, *Cephennodes frontocarinatus* sp. nov.; 12–13, *C. rhinoceros* sp. nov. . Scale bar: 0.2 mm.

nomere I 1.5× as long as broad; II slightly narrower and shorter, 1.3× as long as broad; III slightly narrower and much shorter than II, slightly shorter than long; IV as broad as III but slightly longer, subquadrate; V and VI each as broad as IV but slightly longer, slightly longer than broad; VII slightly broader and distinctly longer than VI, 1.3× as long as broad; VIII slightly broader but distinctly shorter than VII, slightly longer than broad; IX slightly broader and much longer than VIII, slightly longer than broad; X distinctly broader but only slightly longer than IX, about as broad as long; XI slightly broader than X, about as long as IX–X together.

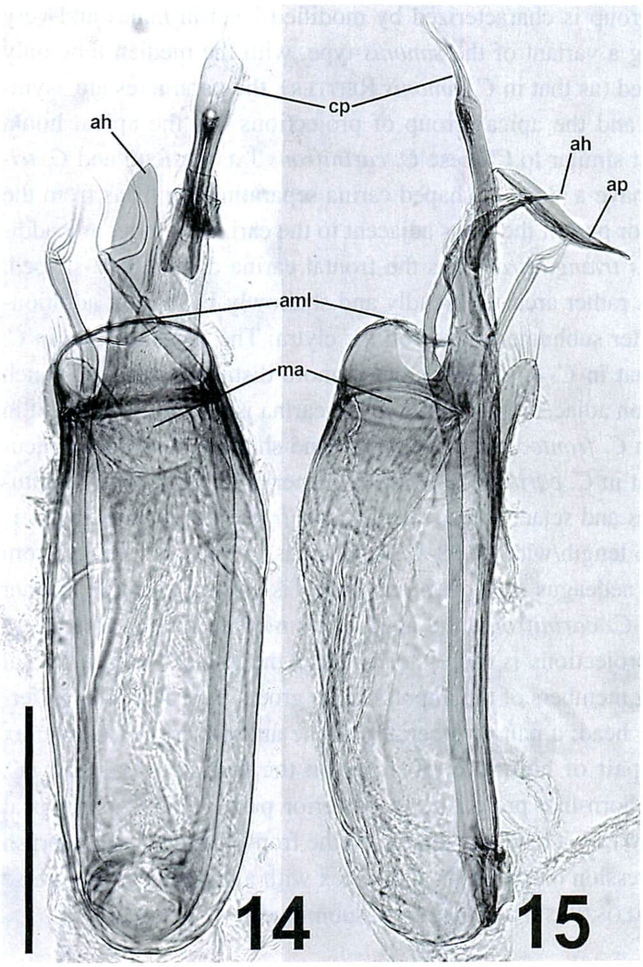
Pronotum nearly semicircular in dorsal view, broadest in middle, strongly flattened near each hind angle and strongly convex in middle, PL 0.56 (0.55–0.58), PW 0.86 (0.83–0.90); anterior margin nearly straight; lateral margins distinctly microserrate, broadly rounded in anterior half, then straight or slightly constricted; hind angles sharp; posterior margin deeply biemarginate; lateral carinae extremely narrow, barely noticeable and not separated from lateral margins; ante-basal pits very shallow and indistinctly delimited from surrounding areas, each located much closer to posterior than to lateral margin. Punctures in median part of disc very distinct, large, deep and sharply marked, separated by spaces equal to or slightly shorter than their diameters, punctures are gradually smaller and shallower toward all margins of pronotum, those near each front angle are very dense, nearly adjacent one to another, but very shallow and small, not coarse; setae moderately dense and long, suberect to erect.

Elytra oval, broadest in anterior third, moderately strongly narrowing toward apices, as convex as pronotum, EL 0.99 (0.98–1.00), EW 0.85, EI 1.15–1.18. Humeral denticle very distinct, subhumeral line carinate, as long as about 0.4× length of elytra, apices of elytra separately rounded. Punctures in median area of each elytron are much smaller and shallower than those on pronotum, but sharply marked and distinct, separated by spaces equal to 1.5–2× their diameters, punctures are gradually smaller and shallower toward margins of elytra, and become especially indistinct near apices; setae much longer but slightly sparser than those on pronotum, curved and erect. Hind wings well developed.

Metaventrite without lateral impressions.

Legs moderately long and slender, without peculiar characters.

Aedeagus (Figs. 10, 11, 14, 15) 0.63 mm in length, variant of simonis-type, with extremely long and slender, only slightly asymmetrical median lobe, group of apical projections moderately long, slender, with moderately curved apical hook; parameres very slender, distinctly asymmetrical, each bearing three apical/subapical setae. Aedeagus with extruded copulatory piece is shown in Figs. 14–15.



Figs. 14–15. 14, Aedeagus of *Cephennodes frontocarinatus* sp. nov. with extruded copulatory piece in ventral;15, lateral views; ah - apical hook, aml - apex of median lobe, ap - apical projection, cp - copulatory piece, ma - membranous area. Scale bar: 0.2 mm.

Female. Externally similar to male but slightly smaller, with non-modified head and slightly shorter elytra. BL 1.77 (1.73–1.83), HL 0.25, HW 0.44 (0.43–0.45), AnL 0.84 (0.80–0.88), PL 0.59 (0.58–0.63), PW 0.84 (0.83–0.85), EL 0.94 (0.90–0.95), EW 0.83 (0.80–0.85), EI 1.10–1.19.

Holotype: ♂, white printed label, "TL: nr. 2nd Gate (1,600 m), Doi Inthanon NP, [N-THAILAND], 19. X. 2006, S. NOMURA leg." (NSMT). Paratypes (14 males, 23 females): 6 males, 13 females, same date as holotype; 5 males, 8 females, same data except for 21. X. 2006; 3 males, same data except for 23. X. 2006; 2 females, same data except for 20. X. 2006 (NSMT, PCPJ).

Distribution. N Thailand: Doi Inthanon National Park.

Etymology. The specific name "*frontocarinatus*" refers to the frontal carina on the head of males in this species.

Remarks. This species belongs to the *Cephennodes impressifrons* group, comprising *C. impressifrons* JAŁOSZYŃSKI, *C. carinifrons* JAŁOSZYŃSKI, *C. triangulifrons* JAŁOSZYŃSKI, *C. pteroscapus* JAŁOSZYŃSKI (all from China), and two species from Vietnam (JAŁOSZYŃSKI and

NOMURA, submitted). This species-group is characterized by modified head in males and very large, elongate aedeagus representing a variant of the *simonis*-type, with the median lobe only slightly asymmetrical, not drop-shaped (as that in *C. simonis* REITTER), the parameres are asymmetrical only in short apical parts, and the apical group of projections has the apical hook. *Cephennodes frontocarinatus* is most similar to Chinese *C. carinifrons* JAŁOSZYŃSKI and *C. triangulifrons*. All these three species have a V- or U-shaped carina separating the frons from the clypeus and impressed median anterior part of the frons adjacent to the carina, without any additional pits or tubercles. *Cephennodes triangulifrons* has the frontal carina distinctly V-shaped, whereas that of *C. frontocarinatus* is rather arcuate, broadly and shallowly U-shaped; additionally *C. triangulifrons* has much shorter subhumeral lines on the elytra. The frontal carina in *C. frontocarinatus* is most similar to that in *C. carinifrons*, but is more distinct, sharp and much higher, and also the median impression adjacent posteriorly to the carina is distinctly different in these two species. The impression in *C. frontocarinatus* is small and shallow, with inconspicuous punctures and setae, whereas that in *C. carinifrons* is much deeper and larger, with longitudinal line composed of fine punctures and setae. Moreover, *C. carinifrons* has different proportions of the pronotum, with the ratio length/width 0.68–0.71, whereas in the new species from Thailand the ratio is 0.64–0.66. The aedeagus of *C. frontocarinatus* is also much more slender than those of *C. triangulifrons* and *C. carinifrons*, the apex of its median lobe is much less asymmetrical, the apical group of projections is more slender, and the apical hook in lateral view is much less curved. Remaining members of the impressifrons group have distinctly different combination of characters on the head: a pair of tubercles on the anterior part of the vertex (*C. impressifrons* JAŁOSZYŃSKI); a pair of horn-like tubercles on the frontoclypeal area (*C. pteroscapus* JAŁOSZYŃSKI); a single horn-like projection in posterior part of the frontoclypeal region (*C. rhinoceros* described below); or a median tubercle on the frons provided with a brush of setae and a large, pentagonal impression on the frons and vertex with a trapezoidal transverse carina (two species from Vietnam; JAŁOSZYŃSKI and NOMURA, submitted).

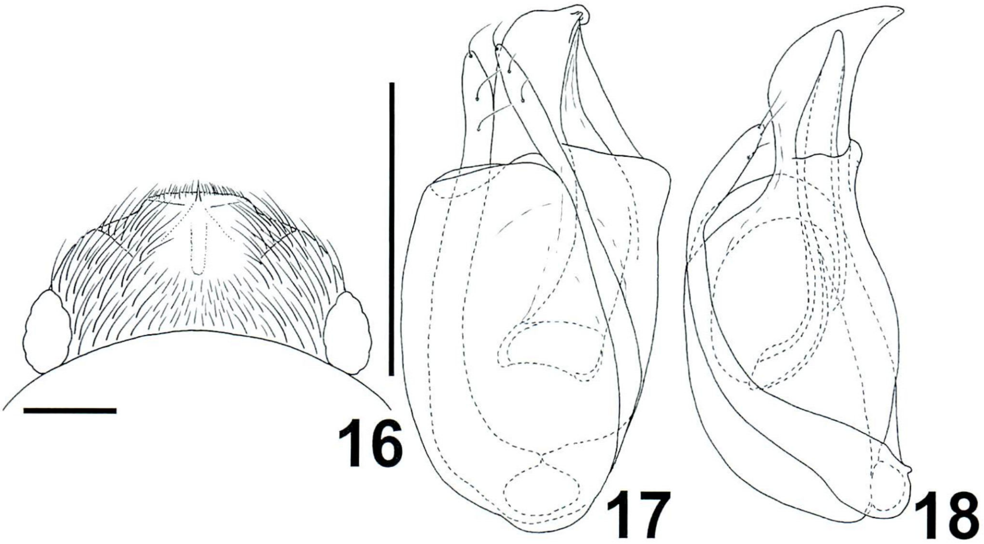
***Cephennodes* (*Cephennodes*) *rhinoceros* sp. nov.**

(Figs. 5, 12, 13, 16)

Diagnosis. This is another member of the *impressifrons* species group; it differs from all other congeners in having tiny, slender and pointed horn-like median projection in posterior part of frontoclypeal area; also aedeagus is unique, a variant of the *simonis*-type, with small, subtriangular and asymmetrically located apical part of median lobe and darkly sclerotized funnel-shaped median structure inside, to which muscles are attached.

Description. Body very stout and strongly convex, very weakly constricted between pronotum and elytra, moderately dark brown, covered with light brown vestiture.

Male (Fig. 5). BL 1.40. Head (Fig. 16) widest at strongly convex, moderately large and coarsely faceted eyes, HL 0.23, HW 0.38; vertex in posterior part weakly convex, in anterior part distinctly impressed but with slightly raised, indistinctly delimited median longitudinal carina adjacent anteriorly to distinct and sharp, bisinuate transverse carina bearing in middle small and slender, horn-like projection pointed at apex (best visible in dorso-posterior view); area anterior to transverse carina convex; supraantennal tubercles small and moderately distinct.



Figs. 16–18. Head of *Cephennodes rhinoceros* sp. nov. in dorso-posterior view (16) and aedeagus of *C. praemorsus* sp. nov. in ventral (17) and lateral (18) views. Scale bar: 0.1 mm.

Punctures on lateral parts of vertex and on clypeus small, shallow, moderately sharply marked, unevenly distributed, most of them separated by spaces equal to their diameter, median carina on vertex impunctate; setae on antero-lateral parts of vertex and on supraantennal tubercles long, moderately dense, suberect, curved and directed anteriorly and toward midline, setae on median and posterior part of vertex short, median longitudinal carina asetose, setae on area anterior to transverse carina moderately long, erect. Antennae moderately long, compact, with five terminal antennomeres forming indistinctly separated and slender club, AnL 0.70; antennomere I slightly shorter than long; II distinctly narrower and longer than I, 1.3× as long as broad; III slightly narrower and much shorter than II, slightly broader than long; IV–V equal in length and width, each as broad as II but slightly longer, subquadrate; VI as broad as V but slightly longer, and slightly longer than broad; VII slightly broader and much longer than VI, about 1.5× as long as broad; VIII distinctly broader than VII but slightly shorter, slightly broader than long; IX much broader and longer than VIII, about as broad as long; X about as long as IX but distinctly broader, slightly broader than long; XI slightly broader than X, slightly shorter than IX–X together.

Pronotum in dorsal view approximately subtrapezoidal, broadest slightly anterior to middle, median part of disc strongly convex, area near each hind angle strongly flattened, PL 0.45, PW 0.68; anterior margin very long and broadly rounded; lateral margins very indistinctly microserrate, broadly rounded in anterior half, then straight up to nearly straight hind angles; posterior margin deeply bisinuate; lateral carinae narrow but well visible, not separated from lateral margins; ante-basal pits very shallow and indistinctly delimited from surrounding areas, each located much closer to posterior than to lateral margin. Punctures in median part of disc very small but sharply marked and dense, separated by spaces 1.5–2× as long as puncture diameters, punctures rapidly become denser toward sides of pronotum, those along lateral margins are distinctly coarse, adjacent one to another. Setae relatively long, dense, suberect to erect.

Elytra oval, broadest in anterior third, EL 0.73, EW 0.68, EI 1.07. Humeral denticle small but distinct, subhumeral line carinate, as long as about 0.4× length of elytra, apices of elytra separately rounded. Punctures slightly smaller and sparser than those on pronotum; setae distinctly longer and more erect than those on pronotum. Hind wings well developed.

Metaventrite without lateral impressions.

Legs moderately long and slender, without peculiar characters.

Aedeagus (Figs. 12, 13) 0.45 mm in length, variant of the *simonis*-type, with oval median lobe, its asymmetrically located apex is protruded and subtriangular; apical group of projections short and broad; in lateral view apical hook relatively weakly curved, its apex pointing apically and only slightly dorsally; internal armature, besides extricable tubular copulatory piece, contains darkly sclerotized, funnel-shaped median structure, to which muscles of median lobe are attached; parameres slender, with asymmetrical apical parts, each bearing three setae.

Female. Unknown.

Holotype: ♂, white printed label "TL (Q): Pha Kluai Mai WF (700m), Khao Yai NP [E-THAILAND], 28. X. 2006, S. NOMURA leg." (NSMT).

Distribution. E Thailand: Khao Yai National Park.

Etymology. The specific name "*rhinoceros*" refers to the horn-like projection on the head of male of this species.

Remarks. This is another member of the *impressifrons* species group. The modification of the head with the single horn-like projection in males of *C. rhinoceros* is unique and allows for unambiguous determination.

Cephennodes **(*****Cephennodes*****)** ***praemorsus*** sp. nov.

(Figs. 6, 17, 18)

Diagnosis. This species is unique in having the following combination of characters: body elongate and moderately convex; head of males non-modified; antennae short, with strongly enlarged three terminal antennomeres; pronotum with distinct sublateral carinae narrowly separated from lateral margins; punctures on pronotum very dense but very small and shallow; aedeagus of the *simonis*-type, with broadly rounded apex of median lobe, apical hook very broad, in lateral view only slightly curved, so that its apex is directed dorso-apically.

Description. Body elongate but compact, without constriction between pronotum and elytra, moderately convex, brown, covered with light brown vestiture.

Male (Fig. 6). BL 1.08 (1.05–1.10). Head widest at strongly convex, moderately large and coarsely faceted eyes, HL 0.13, HW 0.25; vertex regularly convex; frontoclypeal region slightly flattened; supraantennal tubercles small, weakly marked. Punctures on dorsal surface of head very small, indiscernible under magnifications lower than 80x, dense but very shallow and indistinct; setae short, sparse, suberect. Antennae short and compact, with very slender flagellum and strongly enlarged three terminal antennomeres, AnL 0.48 (0.45–0.50); antennomere I 1.3× as long as broad; II slightly narrower but only slightly shorter than I, 1.2× as long as broad; III–V subequal in length and width, each much shorter than II, subquadrate in shape; VI as narrow as VI but slightly longer, 1.1× as long as broad; VII as long as VI but slightly broader, as long as broad; VIII slightly shorter and broader than VII, distinctly broader than long; IX much broader and longer than VIII, broader than long; X much broader and longer than IX, broader than long; X as broad as X, about as long as IX–X together.

Pronotum in dorsal view nearly semicircular, broadest at slightly before middle, PL 0.34 (0.33–0.35), PW 0.48 (0.48–0.50); anterior margin broadly rounded; lateral margins indistinctly microserrate, broadly rounded anterior to broadest place, posteriorly very weakly rounded and slightly convergent toward sharp hind angles; posterior margin deeply bisinuate; sides of pronotum with distinct sublateral carinae narrowly separated from lateral margins; ante-basal pits small and shallow, each located slightly closer to posterior than to lateral margin. Punctures in median part of disc extremely small (noticeable under magnification 40×), moderately sharply marked, unevenly distributed, separated by spaces 0.5–2× their diameters, punctures on disc along posterior half of each sublateral carina and between carinae and lateral margins are distinctly denser and more coarse; setae short, dense, suberect.

Elytra oval, elongate, broadest near anterior third, EL 0.62 (0.60–0.63), EW 0.50, EI 1.20–1.25. Humeral denticle small but distinct, subhumeral lines weakly carinate, only as long as about 0.3× length of elytra, apices of elytra separately rounded. Punctures in median area of each elytron about as dense as those on pronotum, but slightly larger and more distinct; setae slightly longer and more erect than those on pronotum. Hind wings well developed.

Metaventrite without lateral impressions.

Legs moderately long and slender, without peculiar characters.

Aedeagus (Figs. 17, 18) 0.18 mm in length, nearly of classic *simonis*-type, but with apex of median lobe obtusely tapered and broadly rounded; apical group of projections in ventral view subtrapezoidal, in lateral view apical hook very broad and only slightly curved, pointing apically and dorsally; parameres moderately slender, relatively short, each with three setae.

Female. Unknown.

Holotype: male, white printed label "FIT (NG-3): 33 km point (750m), Khao Yai NP [E-THAILAND] 27–30. X. 2006, S. NOMURA leg." (NSMT). Paratypes (2 males): 1 male, same date as holotype (PCPJ); 1 male, same data except for Pha Diew Die View Pt. (1,150m), 26-30. X. 2006 (NSMT).

Distribution. E Thailand: Khao Yai National Park.

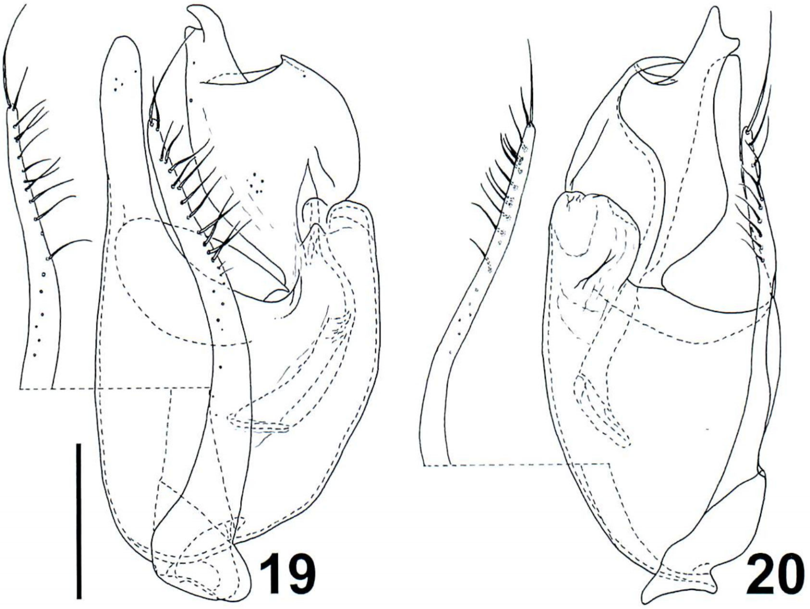
Etymology. The specific name "*praemorsus*" (past participle of Latin "praemordere", meaning "to bite off in front") refers to the truncate apex of the median lobe, which is distinctly protruded in most of other species of the genus.

Remarks. This species belongs to a group comprising a number of similar, unremarkable species known from other countries of the region, but except for their generalized morphology and relatively simple aedeagi, they do not share any particular characters that can be used to define a species group.

***Cephennodes* (*Cephennodes*) *multisaetosus* sp. nov.**

(Figs. 7, 19–24)

Diagnosis. This species is unique in having the following combination of characters: head of males non-modified; punctures on vertex and frontoclypeal region very dense, denser than those on pronotum; antennomeres VIII–X each strongly narrowing basally and distally; antennomere XI very short, much shorter than IX–X together; aedeagus of the *simonis*-type, with



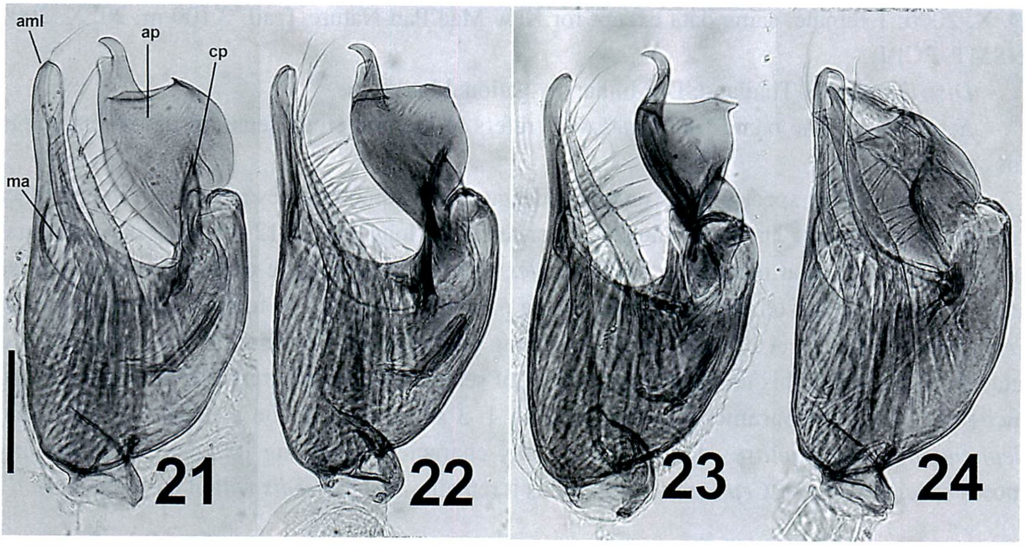
Figs. 19–20. Aedeagus of *Cephennodes multisaetosus* sp. nov. in ventral (19) and lateral (20) views. Scale bar: 0.1 mm.

parameres bearing 12–15 setae distributed in row occupying apical half of each paramere.

Description. Body very stout, very weakly constricted between pronotum and elytra, strongly convex, dark brown, covered with light brown vestiture.

Male (Fig. 7). BL 1.50 (1.45–1.53). Head widest at strongly convex but relatively small, coarsely faceted eyes, HL 0.24 (0.23–0.25), HW 0.37 (0.35–0.38); vertex and frontoclypeal region subtriangular, only weakly convex; area posterior to visible part of vertex (in natural position retracted into pronotum and not visible) slightly impressed; supraantennal tubercles weakly marked. Punctures on dorsal surface of head very dense, small and relatively shallow but sharply marked, nearly adjacent one to another; setae short, dense, suberect. Antennae long and slender, moderately compact, with antennomeres VIII–X each strongly narrowing basally and distally, club 5-segmented, slender and indistinctly separated from flagellum, differing from remaining antennomeres in matt microsculpture; AnL 0.89 (0.88–0.93), antennomere I only slightly longer than broad; II distinctly narrower and slightly longer than I, 1.8× as long as broad; III slightly narrower and much shorter than II, slightly longer than broad; IV–VI subequal in length and width, each as narrow as II but slightly longer, about 1.2× as long as broad; VII only slightly broader but much longer than VI, 1.7× as long as broad; VIII distinctly broader but only slightly longer than VII, 1.3× as long as broad; IX slightly longer and broader than VIII, 1.4× as long as broad; X slightly broader but not longer than IX, 1.2× as long as broad; XI slightly broader than X, much shorter than IX–X together.

Pronotum in dorsal view nearly semicircular, broadest at slightly anterior to middle, moderately convex, PL 0.49 (0.48–0.50), PW 0.68 (0.65–0.70); anterior margin weakly rounded; lateral margins indistinctly microserrate, broadly rounded in anterior part up to broadest place, then nearly straight and slightly convergent to nearly straight hind angles; posterior margin deeply bisinuate; lateral carinae very narrow, not separated from lateral margins; ante-basal pits



Figs. 21–24. Aedeagus of *Cephennodes multisaetosus* sp. nov. in ventral view; examples of variously twisted apical projection; aml - apex of median lobe, ap - apical projection, cp - copulatory piece, ma - membranous area. Scale bar: 0.1 mm.

small and shallow, each located much closer to posterior than to lateral margin. Punctures in median part of disc small and shallow but sharply marked and distinct, separated by spaces equal to or slightly longer than their diameters, punctures near each front angle are very dense, adjacent one to another, but shallow and smaller than those in median part of disc, not coarse; setae moderately dense and long, suberect.

Elytra oval, very short, slightly more convex than pronotum, broadest distinctly anterior to middle, moderately strongly narrowing toward apices, EL 0.77 (0.75–0.80), EW 0.72 (0.70–0.75), EI 1.07. Humeral denticle very small, subhumeral line carinate, as long as about 0.4× length of elytra, apices of elytra separately rounded. Punctures in median area of each elytron similar to those on pronotum, but slightly smaller; setae slightly longer and slightly more erect than those on pronotum. Hind wings well developed.

Metaventrite with large, sharply delimited lateral impressions.

Legs moderately long and slender, mesotibiae recurved, with a row of very dense, thick setae along external margin.

Aedeagus (Figs. 19–24) 0.38 mm in length, of the *simonis*-type, with apex of median lobe nearly rod-shaped, strongly projected apically; apical projection very broad, with bifurcate apex; position of apical projection is variable among specimens examined due to narrow basal part that allows movement of entire projection toward apex of median lobe, as shown in Figs. 21–24; base of parameres shifted strongly toward base of median lobe, forming distinct basal collar, parameres slender, not reaching apex of median lobe, each bearing 12–15 setae in apical half.

Female. Externally similar to male, but slightly larger and with slightly shorter antennae. BL 1.56 (1.50–1.58), HL 0.24 (0.23–0.25), HW 0.38 (0.38–0.40), AnL 0.81 (0.80–0.83), PL 0.50, PW 0.71 (0.68–0.73), EL 0.82 (0.80–0.85), EW 0.74 (0.73–0.75), EI 1.07–1.13.

Holotype: male, white printed label "TL: nr. Summit (2,450m), Doi Inthanon NP [N-THAILAND], 22. X. 2006, S. NOMURA leg." (NSMT). Paratypes (12 males, 13 females): 5 males, 6 females, same data as holotype; 7 males, 6 females, same data except for 2,500 m and

19. X. 2006; 1 female, same data except for Kew Mae Pan Nature Trail, 2,100 m, 20. X. 2006 (NSMT, PCPJ).

Distribution. N Thailand: Doi Inthanon National Park.

Etymology. The name "*multisaetosus*" refers to the numerous setae on the parameres in this species.

Remarks. This species has a unique aedeagus, with some features not known in any other member of the genus. The most unusual character is the long row of 12–15 setae on each paramere, while the typical number in *Cephennodes* with the *simonis*-type of the aedeagus is three setae. A large number of subapical setae on the parameres can also be found in some species of *Cephennium* MÜLLER et KUNZE; but all remaining genera of the Cephenniini have typically 1–3 setae. It is likely that this unusual large number of setae on parameres may represent a preserved ancestral state, and parameres provided with 1–3 setae seem to be a result of reduction. *Cephennodes multisaetosus* does not show any characters assigning its position within any known species group of *Cephennodes*, and thus it remains *incertae sedis* within the subgenus.

Cephennodes (*Cephennodes*) *falcipenis* sp. nov.

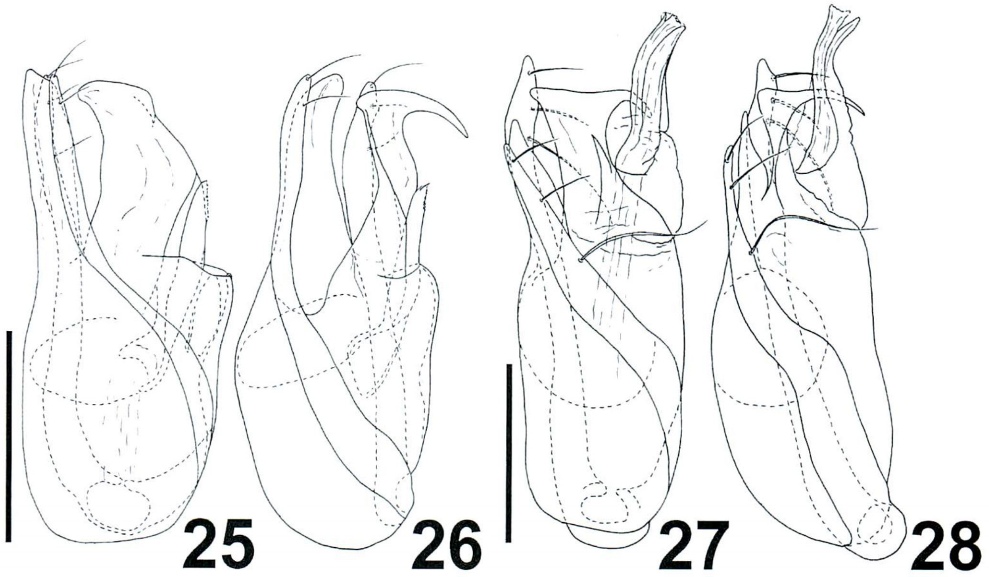
(Figs. 8, 25, 26)

Diagnosis. This species has an unremarkable but unique aedeagus, which is of the *simonis*-type with extremely prolonged, rod-shaped apical part of median lobe, apical hook in lateral view falciform, with apex pointing distinctly basally, parameres of equal lengths, not exceeding apex of median lobe, and insertion of parameres without collar. Additionally, antennomere XI is very short, only 1.3× as long as broad; punctures on head and pronotum very small but dense and distinct, and subhumeral lines on elytra only as long as 0.2× length of elytra.

Description. Body moderately stout, very weakly constricted between pronotum and elytra, moderately convex, brown, covered with light brown vestiture.

Male (Fig. 8). BL 1.25. Head widest at strongly convex but moderately large, coarsely faceted eyes, HL 0.18, HW 0.30; vertex and frontoclypeal region regularly convex; supraantennal tubercles weakly raised. Punctures on median part of vertex small but distinct, sharply marked, unevenly distributed, separated by spaces 1–2× as long as their diameters, punctures are gradually becoming smaller and sparser toward posterior part of vertex and frontoclypeal area; setae short, moderately sparse, suberect. Antennae short and compact, with moderately slender flagellum and strongly enlarged three terminal antennomeres, AnL 0.58; antennomere I 1.3× as long as broad; II distinctly narrower and slightly shorter than I, 1.3× as long as broad; III narrower and shorter than II, slightly broader than long; IV–VI subequal in length and width, each as narrow as III but slightly longer, subquadrate; VII only slightly longer and broader than VI, as long as broad; VIII slightly broader but not longer than VII, distinctly broader than long; IX much broader and slightly longer than VIII, much broader than long; X much broader and slightly longer than IX, much broader than long; XI slightly broader than X, slightly shorter than IX–X together, only 1.3× as long as broad.

Pronotum nearly semicircular in dorsal view, broadest at base, PL 0.35, PW 0.53; anterior margin broadly rounded; lateral margins distinctly microserrate, broadly rounded in anterior



Figs. 25–28. Aedeagus in ventral (25, 27) and lateral (26, 28) views. *Cephennodes falcipenis* sp. nov. (25–26); and *C. oblongopunctatus* sp. nov. (27–28). Scale bar: 0.1 mm.

half, then slightly constricted; hind angles sharp, slightly protruding laterally and posteriorly; posterior margin deeply biemarginate; lateral carinae very narrow, not separated from lateral margins; ante-basal pits small but deep and sharply marked, each located much closer to posterior than to lateral margin. Punctures in median part of disc distinct and sharply marked but small and relatively shallow, unevenly distributed, separated by spaces 1–2× their diameters, area near each hind angle is covered with punctures denser than those in middle and distinctly coarse, area near each front angle bears similarly dense, but shallower and more diffused punctures. Setae dense, moderately long, suberect.

Elytra oval, elongate, broadest between middle and anterior third, EL 0.73, EW 0.58, EI 1.26. Humeral denticles large, subhumeral lines blunt, very short, only as long as 0.2× length of elytra, apices of elytra separately rounded. Punctation similar to that on pronotum, but punctures are slightly smaller and less distinct; setae slightly longer and more erect than those on pronotum. Hind wings well developed.

Metaventrite without lateral impressions.

Legs moderately long and slender, without peculiar characters.

Aedeagus (Figs. 25, 26) 0.23 mm in length, of the *simonis*-type, with extremely long and slender, rod-shaped apical part of median lobe, apical group of projections in ventral view broadest at base, in lateral view apical hook sickle-shaped, with pointed apex directed distinctly toward base of aedeagus; parameres of equal length, long and slender, both reaching but not exceeding apex of median lobe, with 2–3 setae.

Female. Unknown.

Holotype: male, white printed label "FIT(NG-3): nr.2nd Gate 1,600m), Doi Inthanon NP [N-THAILAND] 19–23. X. 2006, S. NOMURA, W. SAKCHOOWONG *et al.* leg." (NSMT).

Distribution. N Thailand: Doi Inthanon National Park.

Etymology. The name "*falcipenis*" refers to from the sickle-shaped (i.e., falciform; after

Latin "falx", a sickle) apical hook of the aedeagus.

Remarks. The aedeagus of this species is most similar to that of *C. oblongopunctatus*, described below. Besides small but distinct differences in the length of the parameres, however, the shape of the insertion of the parameres, and the shape of the apical group of projections, these two species have strikingly different morphology. *Cephennodes falcipenis* is much smaller and stouter, with short, compact antennae and inconspicuous punctation of the dorsum, whereas *C. oblongopunctatus* has relatively longer antennae with loosely assembled segments, and very dense punctation, especially that on the elytra. Species with similar aedeagi are known to occur in Vietnam (JAŁOSZYŃSKI and NOMURA, submitted), but their external morphology is relatively dissimilar, and it is unclear whether they form a natural group or not. Therefore, *C. falcipenis* remains *incertae sedis* within the subgenus.

Cephennodes **(*Cephennodes*)** ***oblongopunctatus*** sp. nov.

(Figs. 9, 27, 28)

Diagnosis. This species can be easily distinguished from all other congeners on the basis of elongate but very convex body covered with short and very dense setae, and very dense, sharply marked and distinct punctures on head, pronotum and elytra; anterior half of elytra is covered with particularly distinct, ellipsoidal punctures; additionally antennae are unique, with antennomeres II–VIII each strongly narrowing basally and distally, nearly moniliform.

Description. Body elongate, distinctly constricted between pronotum and elytra, strongly convex, brown, covered with light brown vestiture.

Male (Fig. 9). BL 1.43. Head widest at strongly convex but moderately large, coarsely faceted eyes, HL 0.23, HW 0.30; vertex and frontoclypeal area regularly convex, vertex with pair of barely visible tubercles; supraantennal tubercles small but well visible. Punctures on median part of vertex moderately large but very distinct, sharply marked and deep, unevenly distributed, separated by spaces equal to 1–2× their diameters; setae short and moderately dense, suberect to erect. Antennae long, moderately slender, loosely assembled, with five terminal antennomeres forming very indistinctly separated club, antennomeres II–VIII each with narrowed basal and apical parts, appearing nearly moniliform, AnL 0.65; antennomere I only slightly longer than broad; II distinctly narrower and shorter than I, 1.2× as long as broad; III–V subequal in length and width, each slightly narrower and much shorter than II, about as long as broad; VI slightly broader and longer than V, about as long as broad; VII distinctly broader and slightly longer than VI, broader than long; VIII as broad as VII but slightly shorter, broader than long; IX much broader and slightly longer than VIII, broader than long; X slightly broader and much longer than IX, broader than long; XI as broad as X, slightly longer than IX–X together.

Pronotum semielliptical in dorsal view, broadest slightly anterior to middle, PL 0.43, PW 0.55; anterior margin weakly rounded; lateral margins very indistinctly microserrate, broadly rounded in anterior half, then nearly straight and slightly narrowed toward straight hind angles; posterior margin very shallowly bisinuate; lateral carinae extremely narrow, not separated from lateral margins; ante-basal pits shallow and small, but distinctly delimited from surrounding areas, each located equally closely to posterior and lateral margin. Punctures in median part of disc very distinct, small but deep and sharply marked, slightly elongate longitudinally, densely, evenly distributed, separated by spaces slightly narrower than their diameters, punctures are gradually smaller but similarly dense toward all margins of pronotum; setae dense and short, only slightly suberect.

Elytra oval, elongate, broadest in anterior third, strongly narrowing toward apices, EL 0.78, EW 0.60, EI 1.29. Humeral denticles small but sharp and very distinct, subhumeral lines carinate but very short, only as long as about 0.2× length of elytra, apices of elytra separately rounded. Punctures in anterior half of each elytron larger than those on pronotum, more elongate (about twice as long as broad), deep and sharply marked, separated by spaces less than their widths, punctures are gradually becoming smaller, shallower and more circular in shape toward lateral margins and apices of elytra, those in posterior fourth of each elytron are very shallow and slightly diffused; setae similar to those on pronotum. Hind wings well developed.

Metaventrite without lateral impressions.

Legs moderately long and slender, without peculiar characters.

Aedeagus (Figs. 27, 28) 0.28 mm in length, *simonis*-type, relatively slender, with very long, rod-shaped apical part of median lobe, apical group of projections in ventral view distinctly constricted in middle, in lateral view apical hook sickle-shaped, with pointed apex directed only slightly toward base of aedeagus; parameres of different lengths, long and moderately slender, one much longer than median lobe, each with three setae, seta most distant from apex is extremely long; base of parameres forms distinct collar surrounding basal orifice.

Female. Unknown.

Holotype male, white printed label "Kew Mae Pan Nature Trail (leaf litter: 2,100m), Doi Inthanon NP [N-THAILAND] 20. X. 2006, S. NOMURA leg." (NSMT).

Distribution. N Thailand: Doi Inthanon National Park.

Etymology. The specific name "*oblongopunctatus*" refers to the elongate punctures densely covering pronotum and elytra of this species.

Remarks. See remarks at *C. falcipenis*. Despite the similar aedeagus with strongly protruded apex of the median lobe and a sickle-shaped apical hook, *C. oblongopunctatus* is externally very different from *C. falcipenis*, and also must remain as *incertae sedis* within the subgenus.

Acknowledgments

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要約

Paweł JAŁOSZYŃSKI・野村 周平：タイ，ドイ・インタノンおよびカオ・ヤイ国立公園で採集したムナビロコケムシの新種（コウチュウ目，コケムシ科）．——タイにおけるムナビロコケムシ族の分布を初めて記録する．ドイ・インタノンおよびカオ・ヤイ国立公園において以下に示す*Cephennodes* 属 6 新種および *Cephennomicrus* 属 1 新種を得たので，本論文により記載する：*Cephennodes* (*Cephennodes*) *frontocarinatus* sp. nov., *C.* (*C.*) *rhinoceros* sp. nov., *C.* (*C.*) *multisaetosus* sp. nov., *C.* (*C.*) *praemorsus* sp. nov., *C.* (*C.*) *falcipenis* sp. nov., *C. oblongopunctatus* sp. nov.および *Cephennomicrus inthanonensis* sp. nov. 以上全種の全形図および雄交尾器を図示するとともに，*Cephennodes* 属新種の既知の種群との比較について考察した．

References

CROISSANDEAU, J. 1894. Scydmaenidae européens et circa-méditerranéens. *Annales de la Société Entomologique de France*, **62**: 409–442, 503–504.

FRANZ, H. 1983. Scydmaeniden des Ungarischen Naturwissenschaftlichen Museums in Budapest aus Südostasiens: Sri Lanka, Thailand und Vietnam. *Folia Entomologica Hungarica*, **XLIV**(2): 175–187.

FRANZ, H. 1985. Neue und ungenügend bekannte Scydmaeniden (Coleoptera) aus Taiwan, Fukien und Thailand. *Mitteilungen der Münchner Entomologische Geselschaft*, **74**: 91–128.

FRANZ, H. 1989. 4. Beitrage zur Scydmaenidenfauna von Thailand (Die Scydmaenidenausbeute von D.H. BURCKHARDT u. I. LÖBL). *Revue suisse de Zoologie*, **96**: 33–80.

JAŁOSZYŃSKI, P. 2004. Revision of scydmaenid beetles of the genus *Syndicus* MOTSCHULSKY (Coleoptera, Scydmaenidae). *National Science Museum Monographs*, No. **25**, National Science Museum, Tokyo, 108 pp.

JAŁOSZYŃSKI, P. 2007. The Cephenniini (Coleoptera, Scydmaenidae) of China. II. *Cephennodes* REITTER of southern provinces, with taxonomic notes on the *Cephennodes-Chelonoidum* complex (Coleoptera, Scydmaenidae). *Genus*, **18**(1): 7–101.

JAŁOSZYŃSKI, P. 2008. Taxonomic notes on the Cephenniini (Coleoptera, Scydmaenidae): Status of *Coatesia* LEA, *Neseuthia* SCOTT and *Cephennomicrus* REITTER. *Zootaxa*, 1696: 25-36.

LEA, A.M. 1915 (1914). Notes on Australian and Tasmanian Scydmaenidae, with descriptions of new species. *Proceedings of the Royal Society of Victoria, Melbourne* (N.S.), **27**: 198–231.

REITTER, E. 1877. Neue caucasische Coleopteren, gesammelt von Hans LEDER. *Deutsche Entomologische Zeitschrift*, **21**: 289–296.

REITTER, E. 1907. Verzeichnis der von Dr. F. EICHELBAUM im Jahre 1903 in Deutsch-Ostafrika gesammelten Scydmaeniden (Col.). *Wiener Entomologische Zeitung*, **26**: 297–305.

SCOTT, H. 1922. Coleoptera: Scydmaenidae, Scaphidiidae, Phalacridae, Cucujidae (supplement), Lathridiidae, Mycetophagidae (including Propalticus), Bostrichidae, Lyctidae. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley GARDINER, M.A. Vol. 7, repart No. 4. *Transactions of the Linnean Society of London*, **18**: 195–260.

STRAND, E. 1935. Revision von Gattungsnamen palaearktischer Coleoptera. *Folia Zoologica et Hydrobiologica*, **7**: 282–299.

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Notes on the Lycid Genus *Plateros* (Coleoptera: Lycidae: Platerodinae) from East Asia, II
A Review of the *Plateros nakachii* Species-Group in the Okinawa Islands, Japan

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Abstract Three new taxa of the genus *Plateros* BOURGEOIS, *Plateros hatayamai* sp. nov., *P. makiharai* sp. nov. and *P. teruhisai kunigamianus* subsp. nov. are described from the Okinawa Islands. *Plateros nakachii* NAKANE is redescribed based on the types. A key to the species and subspecies of the *Plateros nakachii* species-group in the Ryukyu Islands, Southwest Japan is provided.

Introduction

A small lycid-beetle *Plateros nakachii* was described by NAKANE (1961) as a new species from Shuri, Okinawa-hontô Island. Since then, this species has been regarded as the only species having strongly serrate antennae, a black pronotum and red elytra, and is endemic to Okinawa-hontô Island ranging from the southern lowland to the northern mountainous area.

Recently the author had an opportunity to examine 148 specimens of *Plateros* from 27 localities in the Okinawa Islands having the same color pattern as *P. nakachii*. After a close examination, these specimens were separated into four species: two new species, a new subspecies, and *P. nakachii* with a revised description.

In the genus *Plateros*, the *nakachii* species-group is newly proposed on the strongly serrate antennae and red elytra on such eight species from the Ryukyu Islands as cited in the key. They had been treated in *Ditoneces* WATERHOUSE or *Microditoneces* PIC until BOCÁKOVÁ (2001) synonymized these genera with *Plateros*.

Materials and methods

The author examined 271 speimens of the *Plateros nakachii* species-group collected from the Ryukyu Islands, Japan for his taxonomic study. Mating couples of these species were used for the identification of females.

Male genitalia were extracted from abdomens and cleared in hot 5.0% KOH solution for three to five minutes, then washed by water, and preserved in 70% ethyl alcohol.

Main parts of the body including male genitalia were observed, measured and drawn through a stereomicroscope (Olympus VK, 3×10, 6×20) with the aid of a micrometer attached to the right ocular lens.

Depositories. HUMS—Hokkaido University Museum, Sapporo; NMNST—National Museum of Nature and Science, Tokyo; NHMIC—Natural History Museum and Institute, Chiba; OMNH—Osaka Museum of Natural History, Osaka; WPMNH—Wakayama Prefectural Museum of Natural History, Kainan; KMC—author's collection.

Descriptions

Plateros nakachii NAKANE, 1961

(Fig. 1)

Plateros nakachii NAKANE, 1961: 12, pl. 3, fig. 3.
Plateros nakachii: SATÔ & OHBAYASHI, 1968: 69; SATÔ & MATSUDA, 1985: 99–100, pl. 16, fig. 10.
Ditoneces nakachii, NAKANE, 1969: 53–55, fig. 19, a–c; SATÔ & MATSUDA, 1998: 99–100, pl. 16, fig. 10.

Male. Body blackish brown, shining, with mandibles, mesosternum and legs somewhat reddish; head, pronotum and scutellum black to dark reddish brown, shining; antennae black to blackish brown except for reddish brown 2nd segment; claws yellowish brown; elytra unicolor red.

Body surface closely furnished with short, recumbent, yellowish brown pubescence; head, pronotum, and scutellum closely clothed with short, recumbent, blackish to dark reddish brown pubescence; antennae closely clothed with long, suberect, dark reddish brown hairs; elytra densely clothed with short, recumbent, carmine red pubescence.

Head mostly concealed under pronotum, finely and sparsely punctured; frons short, strongly deflexed, slightly rounded in front, with a short narrow longitudinal groove between frontal tubercles, which are weakly swollen just behind antennal insertions; vertex with a distinct oval impression in central portion.

Eyes relatively small, lateral, hemispherically prominent; distance between eyes about 1.3 times as wide as eye diameter.

Antennae barely reaching the middle of elytra; 1st segment stout, strongly swollen at apex; 2nd segment short, cylindrical; 3rd segment triangular, about 1.5 times as long as the apical width; 4th to 10th segments strongly serrate and gradually decreasing in width; 11th segment fusiform; relative lengths of 1st to 11th segments from basal to apical: 1.0 : 0.4 : 1.0 : 1.1 : 1.2 : 1.2 : 1.2 : 1.2 : 1.2 : 1.2 : 1.7.

Maxillary palpi with terminal segment stout, securiform, about 1.5 times as long as wide, slightly longer than 2nd segement. Labial palpi with terminal segment subtriangular, about 1.6 times as long as wide.

Prothorax transverse, about 0.7 times as long as the basal width; anterior margin widely arched; anterior angles widely rounded; lateral mangins subparallel-sided or slightly diverging posteriad; posterior angles triangularly projecting laterad; basal margin bisinuate; sides widely reflexed; disc smooth, convex, obliquely grooved from each anterior corner to the middle of pos-

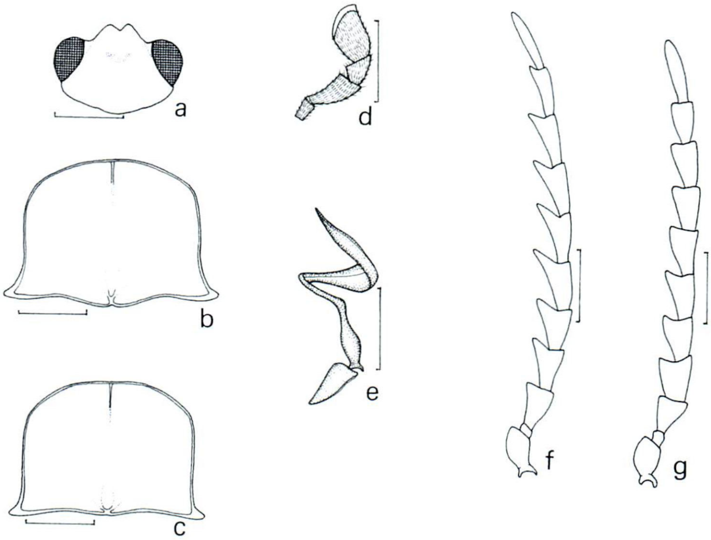

Fig. 1. *Plateros nakachii* NAKANE. — ♂: a, head; b, pronotum; d, maxillary palpus; e, lateral view of male genitalia; f, antenna. ♀: c, pronotum; g, antenna. Scale for a, b, c, f, g : 0.5 mm; Scale for d, e : 0.25 mm.

terior margin, deeply and triangularly impressed at the inside of anterior and posterior corners respectively, finely and closely punctured on central portion, coarsely punctured along anterolateral margins, provided with a short narrow longitudinal carina in front and an oval longitudinal fovea before the middle of basal margin.

Scutellum subquadrate, transversely truncate or weakly emarginate at apex; surface minutely and rather closely punctured.

Elytra subparallel-sided, slightly diverging posteriad, dehiscent behind the basal 1/3 and separately rounded at apices, about 3.0 times as long as wide, about 4.5 times as long as prothorax; each elytron bearing four distinct primary costae, the intervals each with double rows of subquadrate and irregular cells.

Ventral surface rugose, finely and closely punctured; 7th abdominal sternite triangularly emarginate at apex; anal sternite widely swollen at base, strongly converged apicad.

Legs moderate in length; hind tibiae stout, strongly dilated apicad, about as long as hind femora; hind tarsi with 1st to 4th segments subequal in length; 5th segment distinctly longer than 4th segment; claws simple, somewhat angulate at base.

Male genitalia long; median lobe spiral in apical 1/2, strongly bent at the middle, with the distal portion gradually narrowed apicad; basal piece relatively small.

Female: Eyes relatively small, weakly prominent, distance between eyes about 1.4 times as long as eye diameter. Antennae serrate, rather robust, not reaching 2/5 of elytra; 3rd segment about 1.1 times as long as wide; relative lengths of 1st to 11th segments from basal to apical: 1.2 : 0.6 : 1.0 : 1.3 : 1.3 : 1.3 : 1.3 : 1.3 : 1.3 : 1.2 : 1.7.

Measurements. Length: 6.1–6.8 mm; width 1.4–1.6 mm.

Types examined. Holotype, ♂, labels: [HOLOTYPE], [Shuri, Okinawa, 15. V. 1958, O. Nakachi], [*Plateros nakachii* m., Det. T. NAKANE] (HUMS); Allotype, ♀, labels: [ALLO-

TYPE], [Shuri, Okinawa, 15. V. 1958, O. NAKACHI], [*Plateros nakachii* m., Det. T. NAKANE], [T. NAKANE Collection] (HUMS).

Material examined. 1♂, Shuri, Naha City, Okinawa-hontô Is., Okinawa Pref., Ryukyu Islands, Southwest Japan, 19. VI. 1970, H. MAKIHARA leg. (KMC); 1♂, Shuri, 2.VI. 1973, T. HATAYAMA leg. (KMC); 1♂, 1♀, Shuri, 6.VI. 1975, S. IMASAKA leg. (KMC); 1♀, Shuri, 23. V. 1978, O. YAMAJI leg. (KMC); 3♂♂, 3♀♀, Shuri, 29.V. 1978, O. YAMAJI leg. (OMNH&KMC); 1♂, Shuri, 3. V. 1992, M. MATSUMURA leg. (KMC); 1♂, 1♀, Sueyoshi, Naha City, Okinawa-hontô Is., 23. VI. 1975, S. IMASAKA leg. (KMC); 1♂, Sueyoshi, 15. VI. 1993, S. TSUYUKI leg. (KMC); 1♂, Gibo, Okinawa-hontô Is., 1.VII. 1974, T. MIKAGE leg. (KMC); 1♂, Yurudji, Okinawa-hontô Is., 27. VI. 1958, K. IHA leg. (KMC); 5♀♀, Toyama, Okinawa-hontô Is., 31. V. 1958, K. IHA leg. (KMC); 1♂, Seifuutaki, Chinen-son, Okinawa-hontô Is., 1. V. 1994, M. MATSUMURA leg. (KMC); 2♂♂, 2♀♀, Seifuutaki, 2. V. 2003, M. MATSUMURA leg. (KMC); 1♂, Kuteken, Chinen-son, Okinawa-hontô Is.,5. IV. 1998, T. MIKAGE leg. (KMC); 1♂, 1♀, Gaji, Kunigami-son, Okinawa-honto, 25. VI. 1986, Y. MATSUNAGA leg. (KMC); 1♀, Gaji, 5. VII. 1986, Y. MATSUNAGA leg. (KMC); 1♂, 1♀, Ôkuni-rindo, Kunigami-son, Okinawa-hontô Is., 24. VI. 1990, M. MATSUMURA leg. (KMC); 1♀, Ôkuni-rindo, 28. VI. 1992, M. MATSUMURA leg. (KMC); 1♀, Ôkuni-rindo, 5. VI. 1993, Y. KAMANO leg. (KMC); 1♂, Ôkuni-rindo, 12. VI. 1993, S. TSUYUKI leg. (KMC); 3♀♀, Mt. Nishime-dake, Kunigami-son, Okinawa-hontô Is., 17. VI. 1985, Y. MATSUNAGA leg. (KMC); 1♂, 3♀♀, Mt. Yonaha-dake, Kunigami-son, Okinawa-hontô Is., 25. VI. 1973, T. HATAYAMA leg. (KMC); 1♀, Mt. Yonaha-dake, 28. VI. 1973, T. HATAYAMA leg. (KMC); 1♂, 1♀, Mt. Yonaha-dake, 30. VI. 1996, M. MATSUMURA leg. (KMC); 1♀, Yona, Kunigami-son, Okinawa-hontô Is., 15-17. VII. 1970, H. MAKIHARA leg. (KMC); 1♂, 1♀, Ichi, Kunigami-son, Okinawa-hontô Is., 23. V. 1997, M. MATSUMURA leg. (KMC); 1♂, Aha, Kunigami-son, Okinawa-hontô Is., 21. VI. 2008, K. SUGINO leg. (KMC); 2♀♀, Haneji, Nago City, Okinawa-hontô Is., 20. IV. 1992, M. MATSUMURA leg. (KMC); 1♀, Haneji, 17. V. 1994, M. MATSUMURA leg. (KMC); 1♀, Mt. Nago-dake, Nago City, Okinawa-hontô Is., 5. V. 1978, H. HIRAMATSU leg. (WPMNH); 1♀, Mt. Nago-dake, 5. V. 1978, H. ARIMOTO leg. (KMC).

Distribution. Okinawa-hontô Is., Ryukyu Islands, Japan.

Remarks. Through the courtesy of Dr. Masahiro OHARA, the author was able to examine the types of *Plateros nakachii* NAKANE deposited in the Hokkaido University Museum, Sapporo. This species is similar to *Plateros miwai* SATÔ & OHBAYASHI, but can be distinguished from the latter by the following points: 1) pronotum black to dark reddish brown, 2) eyes smaller in size, 3) median lobe of male genitalia narrower in apical 1/2.

Plateros hatayamai MATSUDA, sp. nov.

(Fig. 2)

Male. Body blackish brown, shining, with mandibles, mesosternum, bases of femora reddish brown to yellowish brown; head, pronotum and scutellum black to blackish brown, shining; antennae black to blackish brown except for reddish brown 2nd segment; claws yellowish brown; elytra unicolor red.

Body surface closely furnished with short, recumbent, yellowish brown pubescence; head, pronotum and scutellum closely clothed with short, recumbent, reddish brown pubescence;

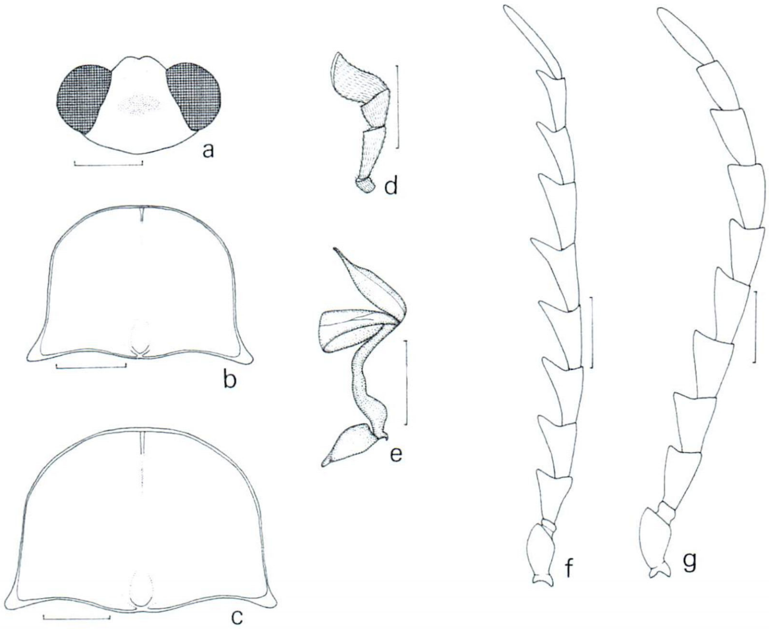

Fig. 2. *Plateros hatayamai* sp. nov. — ♂: a, head; b, pronotum; d, maxillary palpus; e, lateal view of male genitalia; f, antenna. ♀: c, pronotum; g, antenna. Scale for a, b, c, f, g : 0.5 mm; scale for d, e : 0.25 mm.

antennae closely clothed with long, suberect, blackish to dark reddish brown hairs; elytra densely clothed with short, recumbent, carmine red pubescence.

Head mostly concealed under pronotum, finely and rather sparsely punctured; frons short, strongly deflexed, slightly rounded in front, with a short feeble longitudinal groove between frontal tubercles, which are weakly swollen just behind antennal insertions; vertex with a distinct oval impression in central portion, which bears several coarse large punctures.

Eyes very large, lateral, hemisperically prominent; distance between eyes about 0.9 times as wide as eye diameter.

Antennae long, fully reaching the middle of elytra; 1st segment stout, strongly swollen at apex; 2nd segment cylindrical, about as long as wide; 3rd segment triangular, about 1.3 times as long as the apical width; 4th to 10th segments strongly serrate, in which the basal four segments are subequal in width, and the succeeding three segments are gradually decreasing in width; 11th segment fusiform; relative lengths of 1st to 11th segments from basal to apical: 1.0 : 0.4 : 1.0 : 1.0 : 1.3 : 1.3 : 1.3 : 1.2 : 1.2 : 1.2 : 1.8.

Maxillary palpi with terminal segment elongate, securiform, about 1.6 times as long as wide, slightly longer than 2nd segment. Labial palpi with terminal segment subtriangular, about 1.8 times as long as wide.

Prothorax transverse, about 0.7 times as long as the basal width; anterior margin widely and roundly produced; anterior angles widely rounded; lateral margins subparallel-sided or slightly diverging posteriad; posterior angles triangularly and obtusely projecting latero-posteriad; basal margin bisinuate; sides widely reflexed; disc smooth, convex, obliquely grooved from each anterior corner to the middle of posterior margin, deeply impressed at each posterior corner, finely and closely punctured on central portion, coarsely punctured along antero-lateral margins, provided with a short narrow longitudinal carina in front and an oval longitudinal fovea before the middle of basal margin.

Scutellum subquadrate, transversely truncate or weakly emarginate at apex; surface minutely and rather closely punctured.

Elytra subparallel-sided, slightly diverging posteriad, dehiscent behind basal 1/3 and separately rounded at apices, about 3.0 times as long as wide, about 4.5 times as long as prothorax; each elytron bearing four distinct primary costae, the intervals each with double rows of subquadrate and irregular cells.

Ventral surface somewhat rugose, finely and closely punctured; 7th abdominal sternite triangularly emarginate at apex; anal sternite widely swollen at base, strongly converged apicad.

Legs moderate in length; hind tibiae slender, strongly dilated apicad, about as long as hind femora; hind tarsi with 1st to 4th segments subequal in length; 5th segment distinctly longer than 4th segment; claws simple, somewhat angulate at base.

Male genitalia long; median lobe spiral in apical 1/2, moderately bent at the middle, with the distal portion gradually narrowed apicad; basal piece relatively small.

Female: Eyes moderately large, weakly prominent; distance between eyes about 1.2 times as long as eye diameter. Antennae serrate, not reaching the middle of elytra; 3rd segment about 1.4 times as long as wide; relative lengths of 1st to 11th segments from basal to apical: 1.0 : 0.4 : 1.0 : 1.1 : 1.2 : 1.1 : 1.1 : 1.1 : 1.0 : 1.0 : 1.5.

Measurements. Length: 5.7–7.9 mm; width 1.5–2.0 mm.

Type series. Holotype: ♂, Mt. Yonaha-dake, Kunigami-son, Okinawa-hontô Is., Okinawa Pref., Ryukyu Islands, Southwest Japan, 25. VI. 1973, T. HATAYAMA leg. The holotype is deposited in the collection of the Hokkaido University Museum, Sapporo.

Paratypes: 1♂, Mt. Yonaha-dake, 19. V. 1973, K. MATSUDA leg. (KMC); 1♂, Mt. Yonaha-dake, 24. V. 1978, O. YAMAJI leg. (KMC); 1♀, Mt. Yonaha-dake, 28. VI. 1973, T. HATAYAMA leg. (KMC); 1♀, Mt. Yonaha-dake, 6. VII. 1974, T. MIKAGE leg. (HUMS); 2♀♀, Mt. Yonaha-dake, 28. IV. 1975, K. SUGINO leg. (KMC); 1♂, 3♀♀, Mt. Yonaha-dake, 24. V. 1978, O. YAMAJI leg. (KMC); 2♀♀, Mt. Yonaha-dake, 30. VI. 1996, M. MATSUMURA leg. (KMC); 1♀, Mt. Yonaha-dake, 29. VI. 1998, M. MATSUMURA leg. (KMC); 1♀, Mt. Yonaha-dake, 17. VI. 2008, K. SUGINO leg. (KMC); 1♂, Kunigami-son, Okinawa-hontô Is., 21. V. 1970, T. HOZUMI leg. (KMC); 1♀, Yona, Kunigami-son, Okinawa-hontô Is., 25. V. 1963, Y. ARITA leg. (KMC); 2♂♂, 3♀♀, Yona, 12-17. VI. 1970, H. MAKIHARA leg. (NMNST & KMC); 1♀, Yona, 30. IV. 1978, H. HIRAMATSU leg. (WPMNH); 1♂, Hentona, Kunigami-son, Okinawa-hontô Is., 3. V. 1994, M. TANIDA leg. (KMC); 3♀♀, Ôkuni-rindo, Kunigami-son, Okinawa-hontô Is., 24. VI. 1990, M. MATSUMURA leg. (KMC); 1♂, Ôkuni-rindo, 28. VI. 1992, M. MATSUMURA leg. (KMC); 1♂, Ôkuni-rindo, 23. VI. 1993, M. MATSUMURA leg. (KMC); 1♂, Nuha, Okinawa-hontô Is., 29. IV. 2000, I. KAWASHIMA leg. (KMC); 1♀, Iji, Kunigami-son, Okinawa-hontô Is., 22. VI. 1997, M. MATSUMURA leg. (KMC); 5♂♂, 2♀♀, Iji, 9-17. VI. 2008, K. SUGINO leg. (KMC); 1♂, 1♀, Aha, Kunigami-son, Okinawa-hontô Is., 14-20. IV. 2008, K. SUGINO leg. (KMC); 6♂♂, 3♀♀, Aha, 17-21. VI. 2008, K. SUGINO leg. (OMNH&KMC); 1♂, 1♀, Haneji, Kunigami-son, Okinawa-hontô Is., 17. VI. 1994, M. MATSUMURA leg. (KMC); 1♂, 1♀, Mt. Nagodake, Nago, City, Okinawa-hontô Is., 4. V. 1978, H. ARIMOTO leg. (KMC); 1♀, Mt. Nagodake, 2. V. 1988, T. MIKAGE leg. (KMC); 1♀, Haneji-rindo, Nago City, Okinawa-hontô Is., 6. VII. 1986, T. MIKAGE leg. (KMC); 2♂♂, 2♀♀, Makiya, Nago City, Okinawa-hontô Is., 25. V. 2008, M. MATSUMURA leg. (KMC); 1♂, 1♀, Makiya, 5. VI. 2008, M. MATSUMURA leg. (KMC);

1♂, Mt. Tano-dake, Nago City, Okinawa-hontô Is., 3. V. 2005, S. OGATA leg. (KMC); 2♂♂, Ôtagawa, Kume-jima Is., Gushikawa-son, Okinawa Pref., Ryukyu Islands, Southwest Japan, 25. IV. 1995, I. KAWASHIMA leg. (KMC); 1♂, Mt. Uegusuku-dake, Kume-jima Is., 12. V. 2004, I. KAWASHIMA leg. (KMC); 1♂, 5♀♀, Tokashiki, Tokashiki-jima Is., Kerama Islands, Okinawa Pref., Southwest Japan, 17. V. 1995, M. KIMURA leg. (NHMIC).

Distribution. Okinawa-hontô Is., Kume-jima Is. and Tokashikii-jima Is., Ryukyu Islands, Japan.

Etymology. This new species is named in honor of Mr. Takeichiro HATAYAMA, Osaka, Japan, who collected this interesting new species.

Remarks. This new species is similar to *Plateros nakachii* NAKANE, but it is distinguished from the latter species by the following points: 1) eyes larger in size, 2) terminal segment of maxillary palpi more elongate, 3) median lobe of male genitalia wider in apical 1/2.

Plateros makiharai MATSUDA, sp. nov.

(Fig. 3)

Male. Body blackish brown, shining, with mandibles, mesosternum, bases of femora and claws yellowish brown; head, pronotum and scutellum black to dark reddish brown, shining; antennae black to blackish brown except for bases of 2nd to 4th segnments somewhat reddish; elytra unicolor red.

Body surface closely furnished with short, recumbent, yellowish brown pubescence; head, pronotum and scutellum closely clothed with short, recumbent, blackish to reddish brown pubescence; antennae closely clothed with long, suberect, blackish to dark reddish brown hairs; elytra rather densely clothed with short, recumbent, carmine red pubescence.

Head mostly concealed under pronotum, finely and rather sparsely punctured; frons short, strongly deflexed, slightly rounded in front, with a short narrow longitudinal groove between frontal tubercles, which are weakly swollen just behind antennal insertions; vertex with a distinct impression in central portion, which bears a pair of small pores.

Eyes large, lateral, hemisperically prominent; distance between eyes about 0.9 times as wide as eye diameter.

Antennae rather short, barely reaching 2/5 of elytra; 1st segment stout, strongly swollen at apex; 2nd segment short, cylindrical, as long as wide; 3rd segment triangular, about as long as the apical width; 4th to 10th segments strongly serrate and gradually decreasing in width; 11th segment fusiform; relative lengths of 1st to 10th segments from basal to apical: 1.0 : 0.5 : 1.0 : 1.3 : 1.3 : 1.3 : 1.4 : 1.3 : 1.3 : 1.3 : 1.7.

Maxillary palpi with terminal segment elongate, securiform, about 1.7 times as long as wide, about as long as 2nd segment. Labial palpi with terminal segment subtriangular, about 1.7 times as long as wide.

Prothorax transverse, semicircular, about 0.7 times as long as the basal width; anterior margin widely arched; anterior angles widely rounded; lateral margins slightly diverging posteriad; posterior angles sharply projecting latero-obliquely; basal margin bisinuate; sides widely reflexed; disc smooth, convex, obliquely grooved from each anterior corner to the middle of posterior margin, deeply and triangularly impressed at each posterior corner, finely and closely

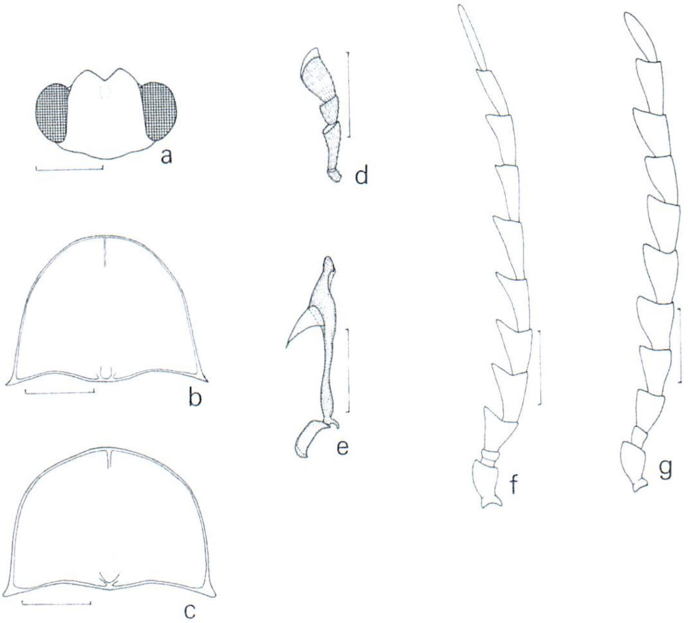

Fig. 3. *Plateros makiharai* sp. nov. — ♂: a, head; b, pronotum; d, maxillary palpus; e, lateal view of male genitalia; f, antenna. ♀: c, pronotum; g, antenna. Scale for a, b, c, f, g : 0.5 mm; scale for d, e : 0.25 mm.

punctured on central portion, coarsely punctured along antero-lateral margins, provided with a short narrow longitudinal carina in front and a lanceolate longitudinal fovea before the middle of basal margin.

Scutellum subquadrate, distinctly emarginate at apex; surface minutely and rather closely punctured.

Elytra subparallel-sided, slightly diverging posteriad, dehiscent behind basal 1/3 and separately rounded at apices, about 3.0 times as long as wide, about 5.0 times as long as prothorax; each elytron bearing four distinct primary costae, the intervals each with double rows of round and irregular cells.

Ventral surface rugose, finely and closely punctured; 7th abdominal sternites roundly emarginate at apex; anal sternite subtriangular, gradually narrowed apicad.

Legs moderate in length; hind tibiae slender, slightly dilated apicad, slightly shorter than hind femora; hind tarsi with 1st to 4th segments subequal in length; 5th segment distinctly longer than the segment; claws simple, somewhat angulate at base.

Male genitalia rather short; median lobe clavate, with a large hook above the middle, and a pair of sharp teeth near apex; basal piece relatively small.

Female. Eyes relatively small, weakly prominent, distance between eyes about 1.6 times as long as eye diameter. Antennae serrate, rather robust, not reaching the middle of elytra; 3rd segment about 1.3 times as long as wide; relative lengths of 1st to 11th segments from basal to apical : 1.0 : 0.5 : 1.0 : 1.1 : 1.1 : 1.1 : 1.1 : 1.1 : 1.0 : 1.0 : 1.6.

Measurements. Length: 6.1–6.8 mm; width 1.4–1.6 mm.

Type series. Holotype: ♂, Yona, Kunigami-son, Okinawa-hontô Is., Okinawa Pref., Ryukyu Islands, Southwest Japan, 12–17. VI. 1970, H. Makihara leg. The holotype is deposited in the collection of the Hokkaido University Museum, Sapporo. Paratypes: 1♀, Yona, Kunigami-son, Okinawa-hontô Is., Okinawa Pref., Southwest Japan, 12–17. VI. 1970, H. Makihara leg. (KMC); 1♂, Yona, 8. IV. 1982, T. Sukenaga leg. (KMC); 1♀, Yona, 30. IV. 1978, H. Hiramatsu leg. (KMC); 2♀♀, Mt. Yonaha-dake, Kunigami-son, Okinawa-hontô Is., 25. IV. 1975, K. Sugino leg. (KMC); 1♀, Mt. Yonaha-dake, 24. V. 1978, O. Yamaji leg. (KMC); 1♂, Mt. Yonaha-dake, 30. IV. 1984, H. & S. Yamashita leg. (KMC); 1♀, Oku, Kunigami-son, Okinawa-hontô Is., 29. VI. 1976, H. Makihara leg. (KMC); 1♂, Haneji, Kunigami-son, Okinawa-hontô Is., 2. V. 1994, M. Matsumura leg. (KMC); 2♂♂, Gaji, Kunigami-son, Okinawa-hontô Is., 26. V. 1996, M. Kimura leg. (NHMIC); 1♀, Mt. Nago-dake, Nago City, Okinawa-hontô Is., 5. V. 1978, H. Arimoto leg. (KMC); 1♀, Mt. Tano-dake, Nago City, Okinawa-hontô Is., 2. VII. 1997, I. Matoba leg. (WPMNH); 1♂, Makiya, Nago City, Okinawa-hontô Is., 11. V. 2008, M. Matsumura leg. (KMC); 1♂, Tokashiki, Tokashiki-jima Is., Tokashiki-son, Kerama Islands, Okinawa Pref., Southwest Japan, 17. V. 1995, M. Kimura leg. (NHMIC).

Distribution. Okinawa-hontô Is. and Tokashiki-jima Is., Ryukyu Islands, Japan.

Etymology. This new species is named in honor of Mr. Hiroshi, Makihara, Ibaraki, Japan, who collected this interesting new species for the first time.

Remarks. This new species is similar to *Plateros satoi* Matsuda, but can be distinguished from the latter by the following points: 1) eyes larger in size, 2) antenna much strongly serrate, 3) pronotum semicircular, 4) median lobe of male genitalia bearing a large fook above the middle.

Plateros teruhisai kunigamianus Matsuda, subsp. nov.

(Fig. 4)

Male. Body blackish brown, shining, with mandibles and mesosternum somewhat reddish; head, pronotum and scutellum black to dark reddish brown, shining; antennae blackish brown except for light brown 2nd segnment; claws yellowish brown; elytra unicolor red.

Body surface closely furnished with short, recumbent, yellowish brown pubescence; head, pronotum and scutellum closely clothed with short, recumbent, reddish brown pubescence; antennae closely clothed with long, suberect, reddish brown hairs; elytra densely clothed with short, recumbent, carmine red pubescence.

Head mostly concealed under pronotum, finely and closely punctured; frons short, strongly deflexed, slightly rounded in front, with a short feeble longitudinal groove between frontal tubercles, which are not strongly swollen just behind antennal insertions; vertex with a distinct V-shaped impression in central portion.

Eyes very large, lateral, hemisperically prominent; distance between eyes about 0.7 times as wide as eye diameter.

Antennae long, fully reaching the middle of elytra; 1st segment stout, strongly swollen at apex; 2nd segment short, cylindrical, about as long as wide; 3rd segment cordiform, slightly shorter than the apical width; 4th to 10th segments strongly serrate, the antennal branches of 6th and 7th segments the longest, about as long as these segments; 11th fusiform; relative lengths of 1st to 11th segments from basal to apical: 1.0 : 0.5 : 1.0 : 1.4 : 1.5 : 1.5 : 1.5 : 1.5 : 1.5 : 1.5 : 2.4.

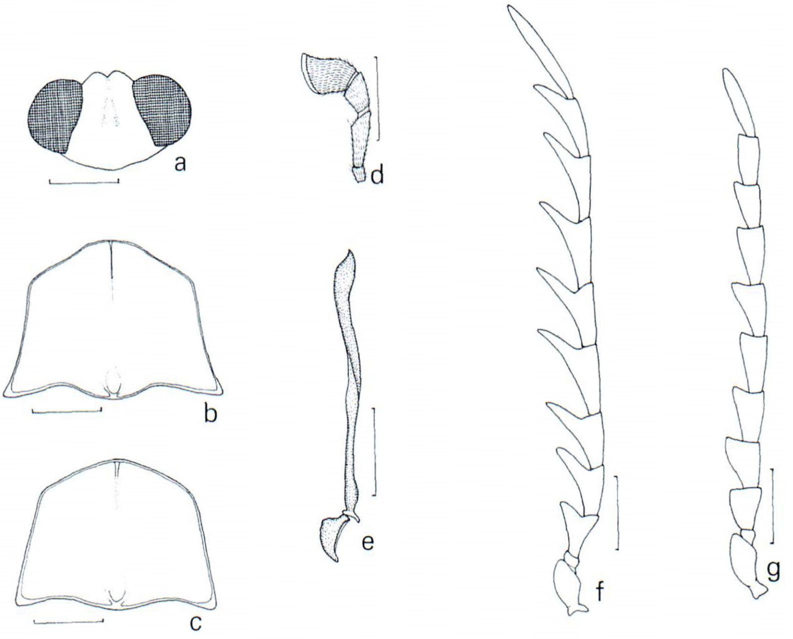

Fig. 4. *Plateros teruhisai kunigamianus* subsp. nov. —— ♂: a, head; b, pronotum; d, maxillary palpus; e, lateal view of male genitalia; f, antenna. ♀: c, pronotum; g, antenna. Scale for a, b, c, f, g : 0.5 mm; scale for d, e : 0.25 mm.

Maxillary palpi with terminal segment, securiform, about 1.5 times as long as wide, a little longer than 2nd segment. Labial palpi with terminal segment subtriangular, about 1.6 times as long as wide.

Prothorax transverse, subpentagonal, about 0.7 times as long as the basal width; anterior angles obtusely rounded; lateral margins slightly sinuate in the middle and strongly diverging posteriad; posterior angles strongly and triangularly projecting latero-posteriad; basal margin bisinuate; sides widely reflexed; disc smooth, convex, with a short narrow longitudinal carina in front and an oval longitudinal fovea before the middle of basal margin.

Scutellum subquadrate, truncate at apex; surface minutely and rather closely punctured.

Elytra subparallel-sided, slightly diverging posteriad, dehiscent behind basal 1/3 and separately rounded at apecies, about 3.1 times as long as wide, about 4.3 times as long as prothorax; each elytron bearing four distinct costae, the intervals each with double rows of subquadrate and irregular cells.

Ventral surface rugose, finely and closely punctured; 7th abdominal sternite roundly emarginate at apex; anal sternite subtriangular, gradually narrowed apicad.

Legs moderate in length; hind tibiae slender, slightly dilated apicad, slightly longer than hind femora; hind tarsi with 1st to 4th segments subequal in length; 5th segment distinctly longer than 4th segment; claws simple, somewhat angulate at base.

Male genitalia long; median lobe flattened and twisted in apical 1/2, with the distal portion suddenly narrowed to apex; basal piece small.

Female. Eyes moderately large, weakly prominent, distance between eyes about 1.1 times as long as eye diameter. Antennae serrate, slender, not reaching the middle of elytra; 3rd segment about 1.1 times as long as wide; relative lengths of 1st to 11th segments from basal to apical: 1.2 : 0.5 : 1.0 : 1.3 : 1.4 : 1.2 : 1.3 : 1.2 : 1.2 : 1.2 : 1.8.

Measurements. Length: 6.8–8.1 mm; width: 1.2–2.0 mm.

Type series. Holotype: ♂, Mt. Yonaha-dake, Kunigami-son, Okinawa-hontô Is., Ryukyu Islands, Southwest Japan, 25. VI. 1973, T. HATAYAMA leg. The holotype is deposited in the collection of the Hokkaido University Museum, Sapporo.

Paratypes: 1♀, Mt. Yonaha-dake, Kunigami-son, Okinawa-hontô Is., Ryukyu Islands, Southwest Japan, 28. VI. 1973, T. HATAYAMA leg. (KMC); 1♀, Mt. Yonaha-dake,Kunigami-son, Okinawa-hontô Is., 24. V. 1978, O. YAMAJI leg. (KMC); 1♀, Yona, Kunigami-son, Okinawa-hontô Is., 4. VI. 1970, M. TAKAGI leg. (KMC); 1♂, Gaji, Kunigami-son, Okinawa-hontô Is., 5. VII. 1986, Y. MATSUNAGA leg. (KMC); 1♂, Okinawa-hontô Is., 1911, S. MATSUMURA leg., labels: [Japan, Matsumura], [Okinawa, (103), 1911], [*Lycus okinawanus* (nom. nud.)] (HUMS).

Distribution. Okinawa-hontô Is., Ryukyu Islands, Japan.

Etymology. This new subspecies is named after the type locality, Kunigami-son, the northern part of Okinawa-hontô Island.

Remarks. This new subspecies is closely related to the nominotypical subspecies, *Plateros teruhisai teruhisai* MATSUDA from Kume-jima Is., but can be distinguished by the following points: 1) pronotum black to dark reddish brown, 2) antennae more strongly serrate, 3) pronotum subpentagonal, 4) median lobe of male genitalia slightly narrower in apical 1/2.

Key to the Species and Subspecies of the *Plateros nakachii* species-group from Ryukyu Islands, Southwest Japan
Based on Males

1 (8) Median lobe spiral in apical 1/2, without spine or hook, attenuate at apex.

2 (3) Eyes relatively small, distance between eyes about 1.3 times as wide as eye diameter; pronotum black to blackish brown, elytra unicolor red. Okinawa-hontô Is. ·· *P. nakachii* NAKANE, 1961

3 (2) Eyes relatively large, distance between eyes less than eye diameter.

4 (5) Pronotum black to blackish brown, elytra unicolor red. Okinawa-hontô Is., Kume-jima Is., Tokashiki-jima Is. ·· *P. hatayamai* sp. nov.

5 (4) Pronotum and elytra red or orange red.

6 (7) Pronotum usually with a large black spot in central portion; median lobe about twice as wide behind apex as base. Amami-Ôshima Is.·· *P. miwai* SATÔ et OHBAYASHI, 1968

7 (6) Pronotum without spot in central portion; median lobe less than twice as wide behind apex as base. Ishigaki-jima Is., Taketomi-jima Is., Iriomote-jima Is. ·· *P. ignius* CHÛJÔ et SATÔ, 1970

8 (1) Median lobe almost straight.

9 (12) Median lobe with a distinct spine or large hook near the middle; pronotum black to blackish brown, elytra red.

10 (11) Median lobe obtuse, triangularly dilated and hooked at the middle; eyes relatively small,

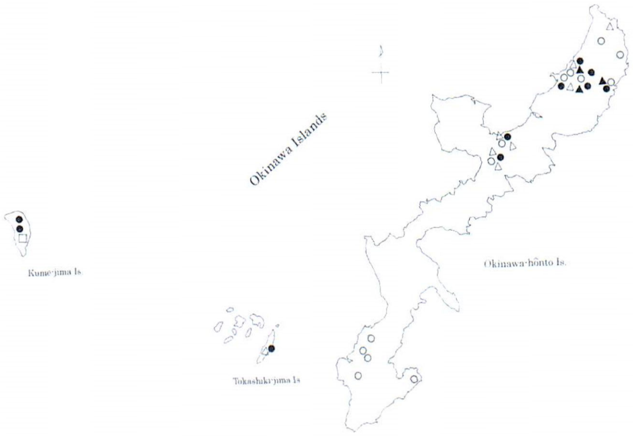

Fig. 5. The geographical distribution of the *Plateros nakachii* species-group in the Okinawa Islands
○ *Plateros nakachii* NAKANE
● *Plateros hatayamai* MATSUDA, sp. nov.
△ *Plateros makiharai* MATSUDA, sp. nov.
▲ *Plateros teruhisai kunigamianus* MATSUDA, subsp. nov.
□ *Plateros teruhisai teruhisai* MATSUDA

distance between eyes about 1.3 times as wide as eye diameter. Amami-Ôshima Is. ······ ······ *P. satoi* MATSUDA, 2007
11 (10) Median lobe with a sharp hook above the middle and a pair of sharp teeth near apex. Okinawa-hontô Is. and Tokashiki-jima Is. ······ *P. makiharai* sp. nov.
12 (9) Median lobe slender, not hooked near the middle.
13 (16) Median lobe cylindrical, not twisted, with a short spine at apex. ······ *P. yayeyamanus* CHÛJÔ et SATÔ, 1970
14 (15) Pronotum black to blackish brown, elytra red. Ishigaki-jima Is., Taketomi-jima Is. and Iriomote-jima Is. ······ *P. yayeyamanus yayeyamanus* CHÛJÔ et SATÔ, 1970
15 (14) Pronotum and elytra red or orange red. Yonaguni-jima Is. ······ *P. yayeyamanus azumai* MATSUDA, 2008
16 (13) Median lobe twised in apical 1/2, without a short spine at apex. ······ *P. teruhisai* MATSUDA, 2007
17 (18) Pronotum and elytra red or orange red. Kume-jima. ······ *P. teruhisai teruhisai* MATSUDA, 2007
18 (17) Pronotum black to blackish brown, elytra red. Okinawa-hontô Is. ······ *P. teruhisai kunigamianus* subsp. nov.

Discussion

As shown in the distribution map of four species of the *Plateros nakachii* species-group in the Okinawa Islands (Fig. 5), *Plateros nakachii* is widely distributed throughout Okinawa-hontô

Is. *P. hatayamai* occurs in the central and northern parts of Okinawa-hontô Is., and also on Kume-jima Is. and Tokashiki-jima Is. *P. makiharai* is known from the central and northern parts of Okinawa-hontô Is. and Tokashiki-jima Is. *P. teruhisai kunigamianus* is only known to occur in the northern part of Okinawa-hontô Is.

The authour recognizes no evident local difference among the populations on Okinawa-hontô Is., Kume-jima Is. and Tokashiki-jima Is. in *Plateros hatayamai* and *P. makiharai*, but slight differences are present on external features and male genitalia in *P. teruhisai* between the populations on Okinawa-hontô Is. and Kume-jima Is. as to discriminate them as different subspecies in this paper.

Plateros nakachii and *P. hatayamai* are closely related to *P. miwai* and *P. ignius* in having spiral formed male genitalia. It is very interesting that *Plateros nakachii* has allopatric distribution in the southern part of Okinawa-hontô Is. with *P. hatayamai* and has sympatric distribution in the central and northern parts of the same island with the latter species. According to the distribution of these two species, the author describes the latter as a new species in the present paper.

Four species of the *Plateros nakachii* group are similar at first glance, but are easily recognized by the marked difference of the male genitalia as noted in their descriptions.

Acknowledgements

The author wishes to express his sincere gratitude to Dr. Masahiro OHARA for the opportunity to make an investigation of types of the *Plateros nakachii* NAKANE deposited in the Hokkaido University Museum, Sapporo.

The author would like also to thank Drs. Kazuyoshi KUROSA, Tokyo, Akiko SAITO, Chiba, Seiya OGATA, Fukuoka and Messrs. Itsuro KAWASHIMA, Kanagawa, Sigeo TSUYUKI, Kanagawa, Toshiharu MIKAGE, Saitama, Hiroshi MAKIHARA, Ibaraki, Takeichiro HATAYAMA, Osaka, Isao MATOBA, Wakayama, Osamu YAMAJI, Okayama, Akihiko WATANABE, Okayama, Masato TAKAGI, Kagawa, Syoichi IMASAKA, Fukuoka, Koichi SUGINO, Okinawa and Masafumi MATSUMURA, Okinawa, Japan for providing many interesting materials for this taxomonic study.

要　　約

松田　潔：東アジア産ハナボタル属の研究 II. ——— 沖縄本島とその周辺の島々に分布するオキナワハナボタル種群の再検討を行った．これまで沖縄本島からは，この種群に属する種として，オキナワハナボタル *Plateros nakachii* 唯1種が報告されてきたが、本研究により，オキナワハナボタルと見做されていたハナボタルの中には、同様の体色を持つ2新種1新亜種が混在することが判明したので，これら2新種，ハタヤマアカベニボタル *Plateros hatayamai* sp. nov.，マキハラアカベニボタル *P. makiharai* sp. nov. と1新亜種，クメジマハナボタル沖縄本島亜種 *P. teruhisai kunigamianus* subsp. nov. を記載した．

References

BOCÁK, L., & M. BOCÁKOVÁ, 1987. A review of Lycidae (Coleoptera) from Taiwan, with a description of a new species. *Acta Entomologica Bohemoslovaca*, **84**: 273–286.

——— 1992, Notes on some genera of the family Lycidae (Insecta: Coleoptera). *Entomologica Basiliensia*, **15**: 255–260.

BOCÁK, L., & K. MATSUDA, 2003. Review of the immature stages of the family Lycidae (Insecta: Coleoptera). *Journal of Natural History*, **37**: 1463–1507.

BOCÁKOVÁ, M., 1997. Revision of the genus *Melaneros* from China with a note on *Ditoneces* (Coleoptera: Lycidae). *Acta Societatis Zoologicae Bohemoslovenicae*, **61**: 175–190.

——— 2001. Revision and phylogenetic analysis of the subfamily Platerodinae (Coleoptera: Lycidae). *European Journal of Entomology*, **98**: 53–85.

BOURGEOIS, J., 1879. Lycides recueillis au Brésil par C. Van VOLXEM. *Comptes Rendus de la Société Entomologique de Belgique*, **22**: 15–19.

CHÛJÔ, M., & M. SATÔ, 1970. Coleoptera of Loo-choo Archipelago (II), 18. Family Lycidae. *Memoirs of the Faculty of Education, Kagawa University*, **2** (192): 27–30.

JENG, M., P. YANG & M. SATÔ, 2002. Checklist of Lycidae (Coleoptera: Elateriformia) of Taiwan. *Formosan Entomologist*, **22**: 171–187.

KAZANTSEV, S., 2004. Contribution to the knowledge of the genus *Plateros* BOURGEOIS, 1879 (Coleoptera: Lycidae). *Russian Entomological Journal*, **13**: 237–244.

KLEINE, R., 1942. Bestimmungstabelle der Lycidae. *Bestimmungstabellen der europaischen Coleopteren*, **123**: 90 pp.

KÔNO, H., 1932. Beitrag zur Lyciden-Fauna Japans. *Insecta Matsumurana* **7**(1/2): 54–64.

MATSUDA, K., 1985. A new species of the genus *Plateros* BOURGEOIS from the Ryukyu Archipelago, Japan (Coleoptera, Lyicidae). *The Entomological Review of Japan, Osaka*, **40**: 11–15.

——— 2007. Two new species of the genus *Plateros* (Coleoptera, Lycidae) from the Ryukyu Islands, Southwest Japan. *Elytra, Tokyo*, **35**(1): 111–118.

——— 2008. Notes on the Lycid genus *Plateros* (Coleoptera: Lycidae: Platerodinae) from East Asia, I, Descriptions of seven new taxa from Japan. *Taichius, Special Publication of the Japan Coleopterological Society, Osaka*, **2** : 241–272.

NAKANE, T., 1961. The lycid-beetles from the Loochoo Islands, with descriptions of a few new forms (Coleoptera). *The Entomological Review of Japan,Osaka*, **13**: 11–15.

——— 1969. Lycidae (Insecta, Coleoptera). *Fauna Japonica*. Academic Press of Japan, Tokyo: 224pp.

PIC, M., 1921. Contribution à l'etude des Lycides. *L'Échange hors-texte, Revue Linnéenne*, **37(404–405)**: 1-8.

SATÔ, M. & K. MATSUDA, 1985. Lycidae, *In*: KUROSAWA, Y., S. HISAMATSU & H. SASAJI (eds.), *The Coleoptera of Japan in Color*, **3**: 92–107,109[incl. pls. 15–17]. Hoikusha, Osaka. (In Japanese with English book title.); 1998, 3rd printing.: 92–107, 109 [incl. pls. 15–17].

SATÔ, M. & N. OHBAYASHI, 1968. Notes on the lycid-beetles of the Ryukyu Archipelago. *The Entomological Review of Japan, Osaka*, **20**: 65–72.

WATERHOUSE, C. O., 1879. *Illustration of typical specimens of Coleoptera in the collection of the British Museum*. Part I., Lycidae, London: 83 pp.

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Three New Species of the Genus *Scaphidium* OLIVIER (Coleoptera: Staphylinidae: Scaphidiinae) from China

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Abstract Three new *Scaphidium* species are described from China: *S. falsum* HE, TANG et LI, sp. nov. and *S. frater* HE, TANG et LI, sp. nov. from Shaanxi Province; *S. pallidum* HE, TANG et LI, sp. nov. from Chongqing City, and their diagnostic characteristics are illustrated.

Key words Coleoptera; Staphylinidae; Scaphidiinae; *Scaphidium*; new species; China.

The genus *Scaphidium* OLIVIER, 1790, is a large genus of the subfamily Scaphidiinae. Presently, at least 323 species of the genus are known worldwide and 36 are from China.

In general, *Scaphidium,* as well as other genera of Scaphidiinae, is easily to be distinguished from the rest genera of Staphylinidae by a box-like and highly convex body shape, with elytra covering abdomen, but not formative of the flexible staphylinoid body shape. Compared with the relative genera of Scaphidiinae, this genus can be distinguished by the combination of the following characters: body robust; head retracted under pronotum; eyes notched; segments of antennal club symmetrical; scutellum large and visible; procoxal cavities closed posteriorly; base of elytron impressed to receive extended basal angle of pronotum; centre of metasternum pubescent in male; mesosternal keel bifid basally.

Recently, we examined a lot of specimens belonging to the genus *Scaphidium* in our collections. Among them, three new species were identified, and will be described in this paper.

All the type specimens are deposited in SHNU (Department of Biology, Shanghai Normal University).

Scaphidium falsum sp. nov.

(Figs. 1–6)

Holotype: ♂, China: Shaanxi Prov.: Hongmiaohe Village, Yingpan Town, Zhashui County, Shaanxi Prov., alt. 1,110 m, 33°8'2189"N, 107°9'8289"E, 3. VI. 2008, Huang Hao & Xu Wang leg. Paratypes: 5♂♂ and 3♀♀, same data as for the holotype; 11♂♂ and 3♀♀, China: Shaanxi Prov.: Qingling, Houzhenzi, Zhouzhi County, alt. 1,343 m, 33°51'203"N, 107°50'183"E, 26. V. 2008, HUANG Hao & XU Wang leg.

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Description. Body, antennal club, femora and tibiae black, abdominal sternites black, with reddish brown along hind margin, antennal segments 1 to 6 and tarsi dark reddish brown. Elytra with reddish or amber subhumeral and subapical fasciae. Subhumeral fascia fairly large, bidentate anteriorly, obtuse at lateral tooth; tridentate posteriorly. Subapical fascia narrower than subhumeral fascia, bidentate anteriorly, evenly rounded posteriorly.

Frons and vertex finely and sparsely punctate; frons at narrowest point between eyes 0.32–0.34 mm.

Pronotum slightly raised above elytra, strongly inflexed anteriorly, with lateral edges moderately sinuate. Antebasal row of punctures impressed laterally. Discal punctation almost evenly fine, rather dense and shallow, denser than that on frons, intervals between punctures mostly 2–3 times as large as their diameters.

Elytra weakly convex, delimiting low humeral protuberance, discal impression or punctured row absent, disc slightly impressed apically. Basal stria slightly impressed laterally, with punctures about as coarse as punctures in pronotal antebasal row; punctures of sutural stria relatively fine. Discal punctation coarse in greater inner portion, much coarser than that on pronotum.

Prohypomera smooth, with very fine punctures, without microsculpture. Mesepisterna very finely and sparsely punctate, without microsculpture.

Exposed abdominal tergites finely and sparsely punctate, with microsculpture consisting of punctures.

Sternite I uneven, impressed laterally, finely, sparsely and irregularly punctate except for the central area finely but densely punctate, and with microsculpture consisting of punctures as those on exposed abdominal tergintes.

Male sexual characters: Metasternum (Fig. 4) impressed in middle portion, with two long lateral setal tufts, and with recumbent pubescence in middle, becoming longer apically. Protibiae (Fig. 6) strongly widened from basal third to apical fourth, angulate and notched at the widest point, thence narrowed toward apex. Aedeagus (Fig. 2) with median lobe 1.53–1.54 mm long. Internal sac (Fig. 3) with apical sclerites complex.

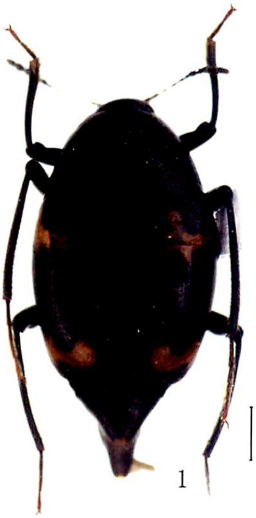
Length: 6.2–7.0 mm.

Distribution. China (Shaanxi).

Etymology. The specific name is derived from the Latin word "falsum" means fraud.

Remarks. This species is extremely similar to *Scaphidium schuelkei* LÖBL, 1999 and can be distinguished from it by the following points: 1. subhumeral fascia bidentate anteriorly, outboard tooth obtuse, whereas in *S. schuelkei* anterior teeth sharp. 2. profemora of male rather flat, whereas in *S. schuelkei* they are expanded and narrowed ventrally and forming a ridge. 3. protibiae of male slightly sinuate, strongly widen from basal third to apical fourth, angular and notched at the widest point, thence narrowed toward apex; while *S. schuelkei* is not notchd.

Figs. 1–18. *Scaphidium* spp. — 1–6 *Scaphidium falsum* sp. nov.; 1, habitus; 2, aedeagus in dorsal view; 3, details of internal sac; 4, metasternum; 5, antenna ; 6, front leg. (1, 4–6 scale bar = 1mm; 2–3 scale bar=0.25mm). — Figs. 7–12 *Scaphidium frater* sp. nov.: 7, habitus; 8, aedeagus in dorsal view; 9, details of internal sac; 10, metasternum; 11, antenna; 12, front leg. (7, 10–12 scale ba r= 1mm; 7–8 scale bar = 0.25mm). — Figs. 13–18 *Scaphidium pallidum* sp. nov.; 13, habitus; 14, aedeagus in dorsal view; 15, details of internal sac; 16, metasternum; 17, antenna; 18. front leg. (13, 16–18 scale bar = 1mm; 14–15 scale bar = 0.25mm)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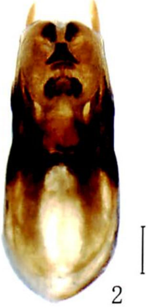
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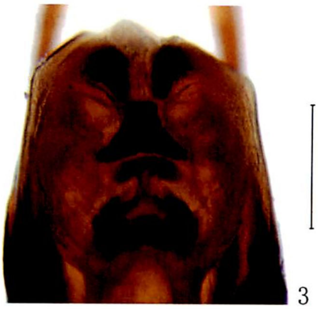
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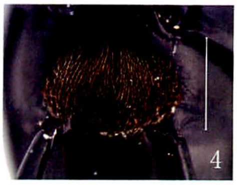
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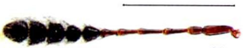
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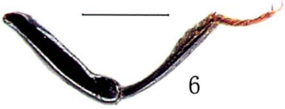
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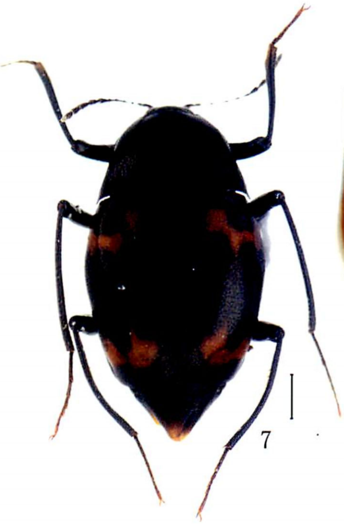
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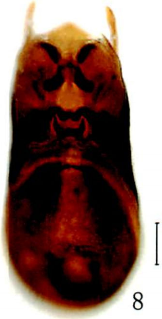
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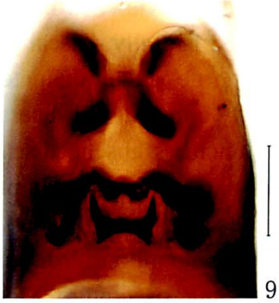
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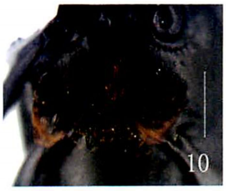
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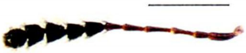
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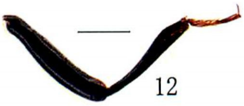
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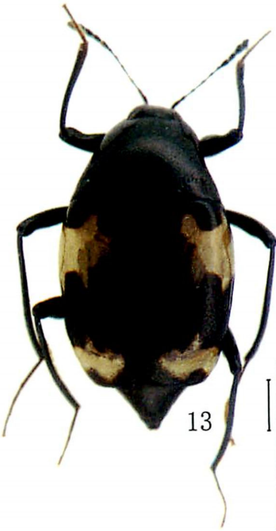
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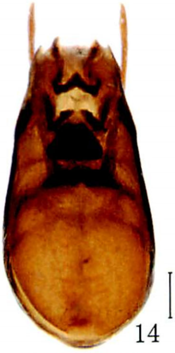
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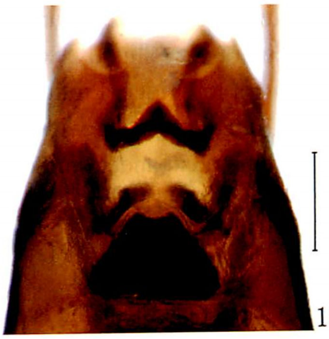
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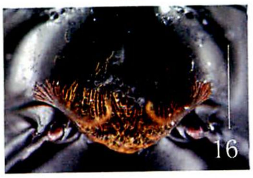
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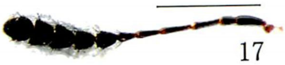
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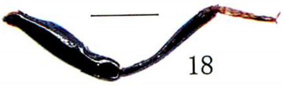
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Scaphidium frater sp. nov.

(Figs. 7–12)

Holotype: ♂, China: Shaanxi Prov.: Qingling, Houzhenzi, Zhouzhi County, alt. 1,343m, 33°51'203"N, 107°50'183"E , 26. V. 2008, HUANG Hao & XU Wang leg. Paratypes: 2♂♂, 3♀♀, same data as for the holotype.

Description. Body, antennal club, femora and tibiae black, abdominal sternites black, with reddish brown along hind margin, antennal segments 1 to 6 dark reddish brown, tarsi dark reddish brown. Elytra with orange subhumeral and subapical fasciae. Subhumeral fascia fairly large, bidentate anteriorly, lateral tooth round, and tridentate posteriorly. Subapical fascia almost as wide as subhumeral fasciae, bidentate anteriorly, evenly rounded or slightly sinuate posteriorly.

Frons and vertex finely and irregularly punctate; frons at the narrowest point between eyes 0.38–0.40 mm.

Pronotum slightly raised above elytra, strongly inflexed anteriorly, with lateral edges moderately sinuate in dorsal view, strongly curved in apical half in lateral view. Antebasal row of punctures impressed laterally. Discal punctures evenly fine and dense, intervals between punctures 1–2 times as large as their diameters.

Elytra weakly convex, with lateral edges strongly sinuate in lateral view. Discal impression or row of punctures absent, disc slightly impressed apically. Basal stria impressed with punctures much coarser than those in pronotal antebasal row; sutural stria relatively fine. Discal punctures as dense as, but slightly coarser than those on pronotum.

Prohypomera smooth on most portion, and slightly impressed subapically, with very fine punctures, without microsculpture. Mesepisterna smooth, with larger and sparser punctures on most median portion, without microsculpture.

Exposed abdominal tergites finely punctate, with microsculpture consisting of very dense punctures. Most of middle portion of sternite 1 finely and sparsely punctate, with microsculptures consisting of punctures; lateral site of sterite 1 with very sparse punctures, slightly uneven and impressed, with mesh-like microsculpture.

Male sexual characters: Middle portion of metasternum (Fig. 10) impressed, pubescence bushy, with recumbent pubescence in middle and two bunches of oblique long pubescence on each side. Profemora very slightly expanded from base to basal third, gradually narrowed ventrally and forming a low ridge. Protibiae (Fig. 12) strongly widened from basal third to anterior of apical fourth, angulate at the widest point, thence narrowed toward apex. Anterior median portion of metafemora expanded; meso- and metatibiae slightly curved. Aedeagus (Fig. 8) with median lobe 1.72 mm long. Internal sac (Fig. 9) with apical sclerites complex.

Length: 7.2–7.5 mm.

Distribution. China (Shaanxi).

Etymology. The specific name is derived from the Latin word "frater" means brother.

Remarks. This species is extremely similar to *Scaphidium schuelkei* LÖBL, 1999 and *S. falsum* sp. nov., but can be distinguished using the following points: 1. the body size of this species is much larger than *S. schuelkei* and *S. falsum* sp. nov.; 2. subhumeral fascia bidentate anteriorly, outboard tooth round, whereas anterior teeth sharp in *S. schuelkei* and obtuse in *S. falsum*; 3. punctation of pronotum and elytral disc similar to that of *S. schuelkei*, but fairly coarser than in *S. falsum*; 4. protibiae of male is strongly widened and angular of these three species, without notch at the widest point of angle in this species and *S. schuelkei*, but notched in *S. falsum*; 5. the metasternal pubescence is quite different.

Scaphidium pallidum sp. nov.

(Figs. 13–18)

Holotype: ♂, China: Chongqing City: East Daba-Shan, lower Huang'an-Gou, Chengkou County, alt. 2,039 m, 31.51.227°N, 109.07.174°E, HUANG Hao & XU Wang leg.

Description: Male. Body, femora, tibiae, antennal club black, antennal segments I–VI and tarsi dark reddish brown. Elytra with yellowish subbasal and subapical fasciae. Subbasal fascia large, occupying between lateral edge and near sutural strial portion, tridentate anteriorly and posteriorly. Subapical fascia narrower than basal fascia, undulate posteriorly, tridentate anteriorly, in which median tooth obvious.

Frons finely and rather densely punctate, sparsely so on vertex; distance between eyes 0.34 mm.

Pronotum not raised above elytra, with anterior edge strongly inflexed and lateral edges moderately sinuate. Antebasal row of punctures slightly impressed laterally. Discal punctures almost evenly fine and rather dense, slightly sparser than those on frons, intervals of punctures mostly 2 to 4 times as large as their diameters.

Elytra weakly convex; humeral protuberance inconspicuos. Discal impression absent, disc slightly impressed apically. Greater part of discal punctures fine and rather dense, similar to that of pronotum, obscure in lateral portions. Discal row of punctures absent; basal stria impressed laterally, with punctures about as coarse as those of pronotal antebasal row; sutural area flat, punctures in sutural stria relatively fine.

Prohypomera smooth, with very fine and sparse micropunctures, without microsculpture. Mesepisterna slightly wrinkled, with fine and sparse micropunctures.

Legs moderately long; mesotibiae slightly curved apically, metatibiae slightly sinuate; mesotarsi long.

Exposed abdominal tergites with distinct punctures and micropunctures. Central portion of sternite I covered with rather coarse and distinct punctures and micropunctures, impressed laterally, with very sparse punctures and inconspicuous micropunctation.

Metasternum (Fig. 16) impressed medially, with pubescence covering almost half the median portion of metasternite, with long semierect pubescence, and two long oblique tufts of long pubescence. Profemora with ventral side expanded gradually from base, widest at median portion, followed by ridge. Protibiae (Fig. 18) gradually widened from basal third, forming a small protuberance and notched at widest portion at apical sixth, then followed by ridge and narrowed toward apex. Metafemora strongly expanded at apical third portion.

Aedeagus (Fig. 14) 1.64 mm long. Internal sac with group of sclerites (Fig. 15).

Length: 6.2 mm.

Female unknown.

Distribution. China (Chongqing).

Etymology. The specific name is derived from the Latin word "pallidum" means pale.

Remarks. This species can be distinguished from the other species of China by the subbasal fascia which is large and tridentate anteriorly and posteriorly, excluding *Scaphidium yun-*

nanum FAIRMAIRE, 1886 and *S. emarginatum* LEWIS, 1893. It can be distinguished from the latter two by the following points: 1. both subbasal and subapical elytral fasciae of this species reaching inner fifth of elytra, wheras in *S. yunnanum* subapical fascia much wider than the subbasal fascia, reaching near sutural stria and the subbasal fascia reaching inner third of elytra; and in *S. emarginatum* subbasal fascia rather closer to sutural stria, subapical fascia slightly narrower than the subbasal fascia, reaching inner third of elytra; 2. male protibiae in this species gradually wider from basal third, forming small protuberance and notch at the widest portion of apical sixth; while in *S. yunnanum* becoming moderately stouter toward apical fourth, with ventral margin hardly angulate at the widest point; in *S. emarginatum* the protibiae expanded internally on the apical half and distinctly notched at apical fourth.

Acknowledgements

We would like to express our sincere gratitude to Dr. I. LÖBL (Switzerland) for his kindly sending us the related papers, to Dr. K. ANDO (Osaka) for critically reading this manuscript, to Mr. Chang-Qing CHEN (Tianjin) for helping a lot in the field work, and to our dear friends Mr. Hao HUANG (SHNU) and Mr. Wang XU (SHNU), who collected all the specimens used in this paper.

要　約

何 文佳・湯 亮・李 利珍：中国産 *Scaphidium* 属デオキノコムシの3新種. ——— 中国・陝西省，四川省から *Scaphidium* 属デオキノコムシの3新種を，*Scaphidium falsum*, *S. frater*, *S. pallidum* と命名，記載した.

References

LÖBL, I., 1997. Instrumenta biodiversitatis, I. Catalogue of the Scaphidiinae (Coleoptera: Staphylinidae). Muséum d'histoire naturelle, Genéve, 1–190.

LÖBL, I., 1999. A review of the Scaphidiinae (Coleoptera: Staphylinidae) of the People's Republic of the China, I. *Revue Suisse de Zoologie*, **106** (3): 691–744.

SHIRÔZU, T. and K. MORIMOTO, 1963. A contribution towards the knowledge of the genus *Scaphidium* OLIVIER of Japan (Coleoptera, Scaphidiidae). *Sieboldia*, **3**: 55–90.

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New or Little-known Tenebrionid Species (Coleoptera) from Japan
(7) Revisional Study of *Borboresthes* (Tenebrionidae: Alleculinae) Species from the Ryukyu Islands

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Abstract Alleculine *Borboresthes* species from the Ryukyu Islands are re-examined. Two named species, *Borboresthes kabirensis* Maeda et Nakane and *Borboresthes amamianus* Maeda et Nakane are re-recorded from their original localities, and newly recorded from Iriomote-jima Is., and Okinoerabu-jima Is., respectively. Four new species are described: *Borboresthes hiraii* sp. nov., *B. kimurai* sp. nov., *B. ohmomoi* sp. nov. and *B. nakanei* sp. nov. A key to all the species from these islands is also provided.

This is the seventh part of the new or little-known tenebrionid species from Japan, and deals with a revisional study of *Borboresthes* (Alleculinae: Tenebrionidae) species from the Ryukyu Islands.

Miyatake (1985) illustrated two species of this genus only from the main islands of Japan (included Tsushima Is.). Just a few years later, Maeda and Nakane (1988) described two new species, *Borboresthes amamianus* from Amami-ôshima Is., and *B. kabirensis* from Ishigaki-jima Is., respectively. Sasaji (1989) enumerated only *B. fulginosus* from the Ryukyu Islands (Yaeyama Islands). Azuma *et al.* (2002) listed two species, *B. amamianus* and *B. fulginosus kabirensis* from the Ryukyu Islands. From Iriomote-jima Is. of the Ryukyu Islands, Miwa (1933) recorded a problematic species *B. fulginosus* originally described from Szé-tchouen (China). Presumably, it must be a misidentification of one of the species from the Ryukyu Islands to be mentioned in this paper.

Before going further in details, the authors wish to express cordial thanks to Messrs. the late Isamu Hirai (Saitama), Satoshi Inada (Okinawa), the late Atsuo Izumi (Tokyo), Hiromu Kamezawa (Tokyo), Tatsunosuke Kimoto (Tokyo), Masaaki Kimura (Okinawa), Sadahiro Ohmomo (Ibaragi), Hidehiro Onodera (Ibaragi), Hiroshi Otobe (Mie), Takashi Shimada (Shizuoka), for offering the type materials. The authors also appreciate Dr. Makoto Kiuchi, Tsukuba City for his taking the photographs inserted in the present paper.

The holotypes will be deposited in the collection of the National Museum for Nature and Science, Tokyo (NSMT).

Borboresthes kabirensis MAEDA et NAKANE, 1988

[Japanese name: Ishigaki-tobiiro-kuchikimushi]
(Figs. 1, 7, 13 and 19)

Borboresthes kabirensis MAEDA et NAKANE, 1988, Rev. Miyazaki Sangyo-keiei Univ., 1: 6 (Kabira, Ishigaki Is.).

Specimens examined. Ishigaki-jima Is.: 1♂ (Fig. 1), 1♀, Omoto, 17. V. 2000, I. HIRAI leg.; 1♀, Mt. Omoto-dake, 100-525m, 6. V. 1993, K. AKITA leg.; 1♀, ditto, 20. IV. 1993, K. AKITA leg.; 1♂, ditto, 6. V. 1994, H. OTOBE leg.; 1♀, ditto, 29. V. 1992, H. KAMEZAWA leg.; 1♂, ditto, 1–7. V. 1994, H. OTOBE leg.; 2♀♀, Mt. Yarabu-dake, 20–180m, 1. V. 1993, K. AKITA leg.; 1♀, ditto, 1–7. V. 1994, H. OTOBE leg.; 1♂1♀, ditto, 5-8. V. 1994, H. OTOBE leg.; 1♀, Hirakubo, 14. IV. 1998, C. ENDÔ leg.; 1♀, Mt. Buzama-dake, 17. IV. 1998, S. OHMOMO leg.; 1♀, Shiramizu, 5. V. 1994, H. OTOBE leg.; 2♀♀, Takeda, 17. IV. 1993, H. ONODERA leg.; 1♂, 1♀, Yonehara, 23. V. 1973, T. NAKANE leg. (NSMT-I-C 44827, 44832); 1♂, ditto, 9. VI. 1982, A. IZUMI leg.; Iriomote-jima Is.: 2♀♀, Aira-gawa Riv., 4. V. 2003, H. OTOBE leg.; 1♂, ditto, 28. IV. 2003, T. KURIHARA leg.; 1♂, Gunkan'iwa - Kampira-no-taki, 3. V. 1995, H. KAMEZAWA leg.; 1♀, Sonai-dake, 18. V. 2000, I. HIRAI leg.; 1♀, Urauchi-gawa Riv., 19. V. 2001, T. SHIMADA leg.; 1♀, Shirahama, 4. V. 2003, J. OKAMURA leg.

Distribution. Ishigaki-jima Is., Iriomote-jima Is. [New Record].

Borboresthes amamianus MAEDA et NAKANE, 1988

[Japanese name: Amami-tobiiro-kuchikimushi]
(Figs. 2, 8, 14 and 20)

Borboresthes amamianus MAEDA et NAKANE, 1988, Rev. Miyazaki Sangyo-keiei Univ., 1: 5 (Amami-Oshima).

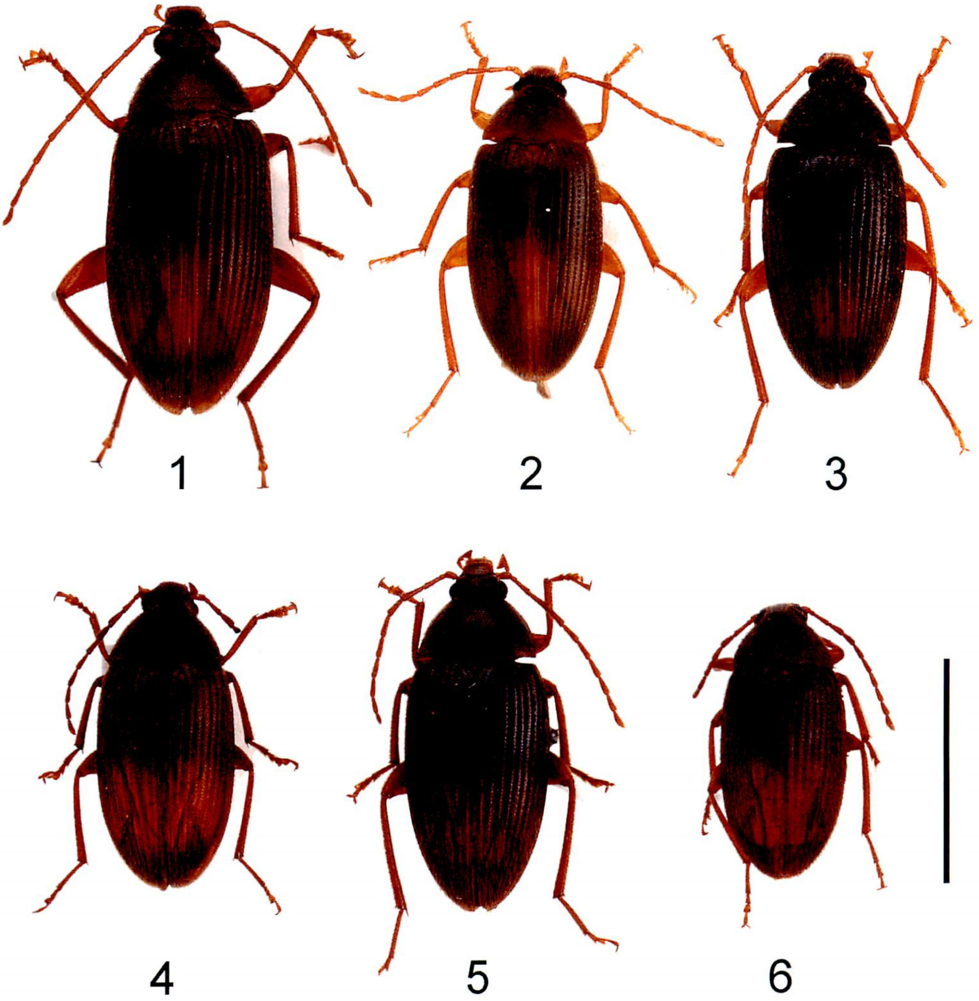
Specimens examined. Amami-ôshima Is.: 1♂ (Fig. 2), Kominato, 5 m, 2–9. V. 1999, K. AKITA leg.; 1♀, ditto, 21. V. 2007, H. OTOBE leg.; Okinoerabu-jima Is.: 1♂, Mt. Oo-yama, China-chô, 22–23. V. 1993, I. HIRAI leg.

Distribution. Amami-ôshima Is., Okinoerabu-jima Is. [New Record].

Borboresthes hiraii sp. nov.

[Japanese name: Hirai-tobiiro-kuchikimushi]
(Figs. 3, 9, 15, 21)

Body elongate-elliptical, moderately convex dorsad; dark reddish brown to dark yellowish brown, head excluding apical part, pronotoum and elytra dark grayish brown, scutellum lighter in colour, apical part of head, mouth parts, antennae and legs brownish yellow, hairs on dorsal surface yellow with feeble brownish tinge; dorsal surface weakly, rather sericeously shining,



Figs. 1–6. *Borboresthes* spp. ♂, habitus.——1, *B. kabirensis* MAEDA et NAKANE; 2, *B. amamianus* MAEDA et NAKANE; 3, *B. hiraii* sp. nov., holotype; 4, *B. kimurai* sp. nov., holotype; 5, *B. ohmomoi* sp. nov., holotype; 6, *B. nakanei* sp. nov., holotype. Scale = 5 mm.

prosternum hardly shining, metasternum and abdomen gently, somewhat vitreously shining; dorsal surface rather densely clothed with decumbent long hairs; ventral surface rather densely clothed with decumbent hairs.

Head subtrapezoidal and rather flat, closely punctate and clothed with fine and rather long hairs, the punctures often confluent with one another in anterior part; clypeus subquadrate, not defined from frons, with apical part produced, feebly narrowed anteriad and truncate in front; genae (areas before eyes) rather small, subtriangular, hardly produced laterad, weakly raised in middle, almost impunctate; frons feebly convex, weakly inclined anteriad; areas near eyes gently depressed, with rows of punctures along eyes. Eyes transversely subreniform in dorsal view, gently convex exteriad, with interior parts comparatively narrowly inlaid into head. Antennae filiform, reaching basal 2/5 of elytra, ratio of the length of each segment from base to apex: 0.36, 0.16, 0.54, 0.63, 0.57, 0.50, 0.48, 0.49, 0.45, 0.50, 0.48.

Pronotum subtrapezoidal in dorsal view, very closely, somewhat umbilicately punctate, covered with fine hairs; apex roundly produced anteriad, finely rimmed in lateral parts; base wholly margined, weakly produced in medial part, feebly emarginate in front of scutellum, rather noticeably sinuous on each side; front angles rounded but not seen from above, hind angles feebly angulate in dorsal view; sides steeply declined to lateral margins in anterior parts, gently so in lateral margins, which are finely bordered; disc moderately convex, closely and rather umbilicately punctate, each puncture with a subdecumbent long hair. Scutellum subtriangular, feebly convex, rather asperate, covered with fine hairs.

Elytra about 1.6 times as long as wide, 3.8 times the length and 1.3 times the width of pronotum, widest at basal 3/8; dorsum rather strongly convex, highest at basal 1/4, very weakly flattened in intero-basal part; disc punctato-striate, the striae in antero-interior parts often discontinuous, the punctures in striae small and closely set; intervals feebly convex, weakly covered with isodiametric microsculpture, scattered with small, feebly transverse punctures, each with a minute protrusion at the anterior edge and a decumbent long hair; humeri weakly swollen; apical parts rounded.

Terminal segment of maxillary palpi widened apicad, truncate at apex, with rounded interior side. Prosternum coarsely, closely punctate and wrinkled; mesosternum coarsely punctate; metasternum weakly covered with isodiametric microsculpture, scattered with punctures, each with a bent short hair. Abdomen closely, finely punctate, each with a decumbent hair, lateral parts of 3rd sternite, major parts of 4th and whole part of 5th weakly covered with isodiametric microsculpture; 5th (anal) sternite without special modification.

Legs moderate-sized and ordinary in shape in the members of this genus; 3rd and 4th segments of pro- and mesotarsi rather noticeably dilated towards each apex, 3rd the widest; metatarsi with 3rd segment feebly widened; ratios of lengths of pro-, meso- and metatarsal segments: 0.30, 0.15, 0.18, 0.25, 0.49; 0.60, 0.23, 0.24, 0.48; 1.00, 0.33, 0.28, 0.50.

Male genitalia about 1.3 mm in length and 0.3 mm in width; basal piece bold in major basal part, rather strongly narrowed anteriad; fused parameres somewhat subrhombic, gently bent ventrad at the border of basal piece, 0.26 mm in length, somewhat nib-shaped.

Body length: 7.2–8.6 mm.

Type series. Holotype. ♂, Amami-ôshima Is., Uken-son, Chûô-rindô, 150–300m, 22–24. VII. 1999, K. AKITA leg. Paratypes. Amami-ôshima Is.: 1♂, 3♀♀, same data as the holotype; 1♀, Uken-son, Mt.Yuwan-dake, 2. VII. 1994, I. HIRAI leg.; 1♀, Kinsakubaru, 26–27. VI. 2001, I. HIRAI leg.; 1♂, Uragami, 22. V. 1960, K. YAMADA leg.; 1♂, Naze, 12. VI. 1960, K. YAMADA leg.; Takara-jima Is.: 2♀, 6. VI. 1981, J. OKUMA leg.

Distribution. Amami-ôshima Is., Takara-jima Is.

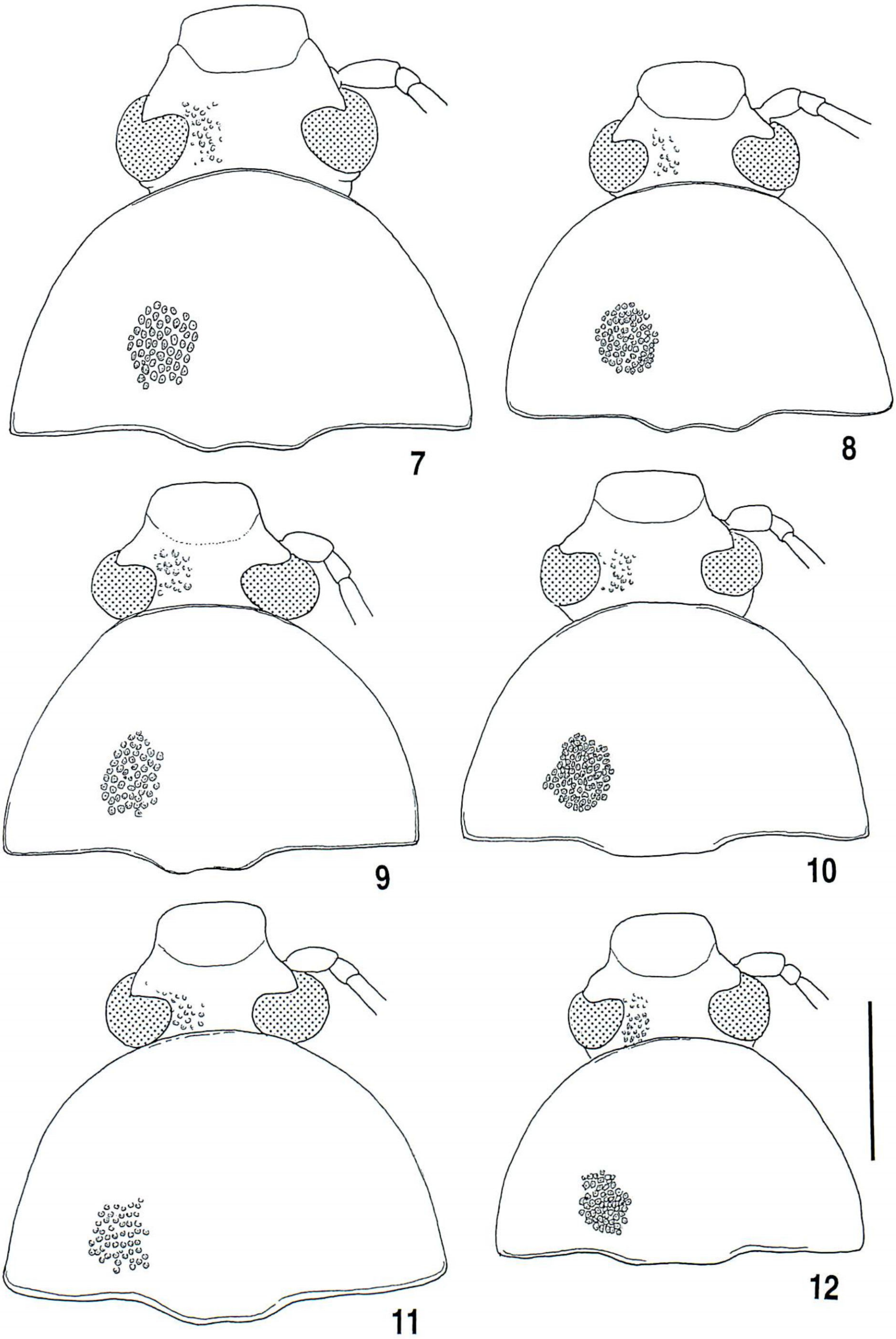
This specific name is dedicated to the late Mr. Isamu HIRAI, who supported our present study and is one of the collectors of the type materials.

Borboresthes kimurai sp. nov.

[Japanese name: Tarama-tobiiro-kuchikimushi]

(Figs. 4, 10, 16, 22)

Body elongate-subelyptical, moderately convex dorsad; dark reddish brown, apical part of head, mouth parts, antennae, femora and tibiae dark yellowish brown, tarsi dusky yellow, hairs



Figs. 7–12. Head and pronotum (♂).——7, *B. kabirensis* MAEDA et NAKANE; 8, *B. amamianus* MAEDA et NAKANE; 9, *B. hiraii* sp. nov., holotype; 10, *B. kimurai* sp. nov., holotype; 11, *B. ohmomoi* sp. nov., holotype; 12, *B. nakanei* sp. nov., holotype. Scale = 1 mm.

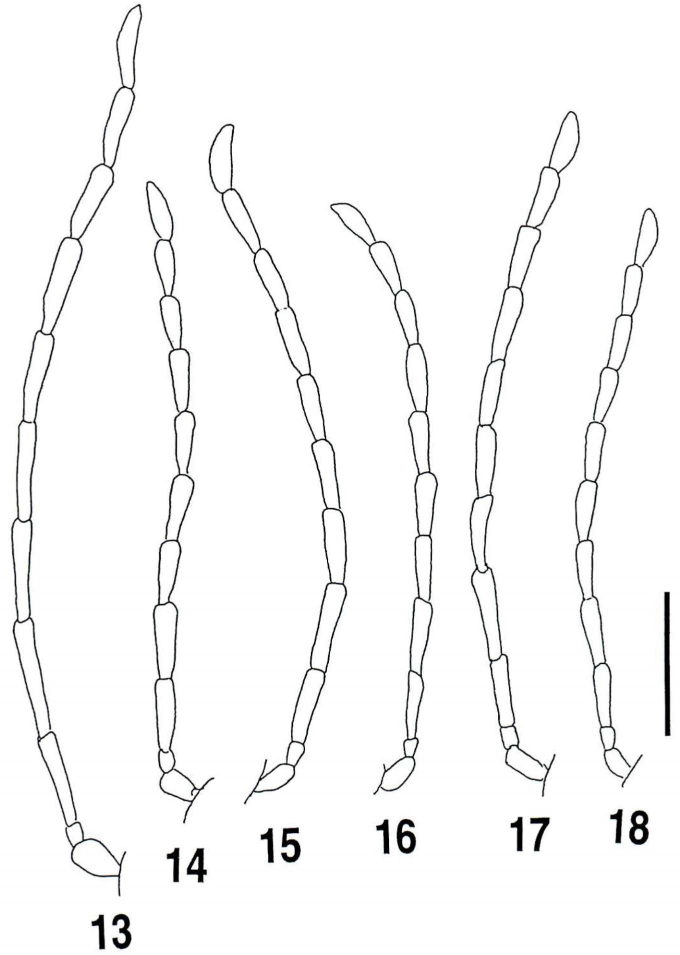
on head, pronotum and scutellum dusky yellow, those on major part of elytra a feebly brownish yellow, and those on antennae and legs dark yellowish brown to pale brown under a certain light; head, pronotum and scutellum dully shining, elytra weakly, somewhat sericeously shining, ventral side of neck vitreously shining, prosterunum hardly shining, metasternum and abdomen weaky, somewhat vitreously shining, abdomen gently, somewhat sericeously shining; dorsal surface rather densely clothed with recumbent long hairs, ventral surface rather densely clothed with short recumbent hairs.

Head subtrapezoidal and rather flat, weakly covered with isodiametric microsculpture, closely punctate, clothed with fine, not so long hairs, the punctures often confluent with one another in anterior part; clypeus subquadrate, roundly defined from frons, feebly depressed against frons, gently produced and subparallel-sided, weakly inclined anteriad, and truncate in front; genae rather small, subtriangular, hardly produced laterad, weakly depressed in posterior parts before eyes, weakly punctulate; frons feebly convex, weakly declined to fronto-clypeal border, which is evenly curved and reached to lateral margins; areas along interior parts of eyes weakly rugoso-punctulate. Eyes transversely subreniform in dorsal view, gently convex exteriad, with interior parts comparatively narrowly inlaid into head and bordered from head by grooves. Antennae filiform, reaching basal 1/3 of elytra, ratio of the length of each segment from base to apex: 0.32, 0.12, 0.48, 0.52, 0.46, 0.45, 0.44, 0.49, 0.40, 0.40, 0.43.

Pronotum subtrapezoidal in dorsal view, very closely, feebly umbilicately punctate, covered with decumbent fine hairs, which become longer in lateral parts; apex roundly produced anteriad, finely rimmed in major lateral parts; base wholly bordered by a fine deep groove, weakly produced in medial part, feebly truncate in front of scutellum, rather angularly sinuous on each side; front angles rounded but not seen from above, hind angles rectangular in dorsal view with corners rounded; sides steeply declined to lateral margins in anterior parts, gently so in lateral margins in posterior parts, both of which are wholly finely rimmed; disc moderately convex, covered with isodiametric microsculpture, very closely and weakly umbilicate-punctate, each puncture with a rather recumbent long hair. Scutellum subhexagonal, convex, weakly covered with isodiametric microsculpture, ruguloso-punctulate, and clothed with fine decumbent hairs.

Elytra about 1.6 times as long as wide, 3.5 times the length and slightly less than 1.3 times the width of pronotum, widest at basal 1/4; dorsum rather strongly convex, highest at basal 1/4, very weakly flattened in interior-basal part; disc with rows of punctures, which are closely set and mostly connected by shallow grooves, each puncture with fine decumbent hair; intervals feebly convex, very weakly covered with isodiametric microsculpture, rather irregularly scattered with small, feebly transverse punctures, which are often connected with one another and forming transverse wrinkles, each puncture with a minute protrusion at the anterior edge and a recumbent long hair; humeri weakly swollen; apical part rounded.

Terminal segment of maxillary palpi subsecuriform, with interior side shortest and gently curved, exterior side gently curved, about 1.6 times longer than the interior in length, apex nearly straight, 1.8 times longer than the interior. Prosternum ruguloso-punctate; mesosternum coarsely punctate, metasternum weakly covered with isodiametric microsculpture, scattered with punctures, each with a short recumbent hair; abdomen closely, finely punctate, each with a recumbent short hair. Abdomen rather closely punctate, each with a recumbent short hair, lateral parts of 2nd sternite, major parts of 3rd and whole part of 4th and 5th weakly covered with isodiametric microsculpture, lateral parts of 1st and 2nd and 4th sternites and basal and lateral parts



Figs. 13–18. Antenna (♂). — 13, *B. kabirensis* Maeda et Nakane; 14, *B. amamianus* Maeda et Nakane; 15, *B. hiraii* sp. nov., holotype; 16, *B. kimurai* sp. nov., holotype; 17, *B. ohmomoi* sp. nov., holotype; 18, *B. nakanei* sp. nov., holotype. Scale = 1 mm.

of 3rd longitudinally wrinkled, male 5th sternite feebly flattened in middle.

Legs moderate-sized and ordinary in shape; 3rd and 4th segments of pro- and mesotarsi noticeably dilated towards each apex, 3rd the widest; metatarsi with 3rd segment gently widened; ratios of lengths of pro-, meso- and metatarsal segments: 0.25, 0.18, 0.21, 0.28, 0.43; 0.48, 0.25, 0.23, 0.28, 0.40; 0.83, 0.33, 0.28, 0.45.

Male genitalia elongated fusiform in dorsal view, about 1.5 mm in length and 0.25 mm in width; basal piece gently narrowed anteriad; fused parameres somewhat nib-shaped, directed anterior-ventrad, 0.25 mm in length.

Body length: 7.0–7.6 mm.

Type series: Holotype. ♂, Tarama-jima Is., 3. VI. 1996, M. Kimura leg. Paratypes. 3♀♀, same data as the holotype.

Distribution. Tarama-jima Is.

This specific name is dedicated to Mr. M. Kimura, who provided us with a series of the type materials.

Borboresthes ohmomoi sp. nov.

[Japanese name: Ohmomo-tobiiro-kuchikimushi]
(Figs. 5, 11, 17, 23)

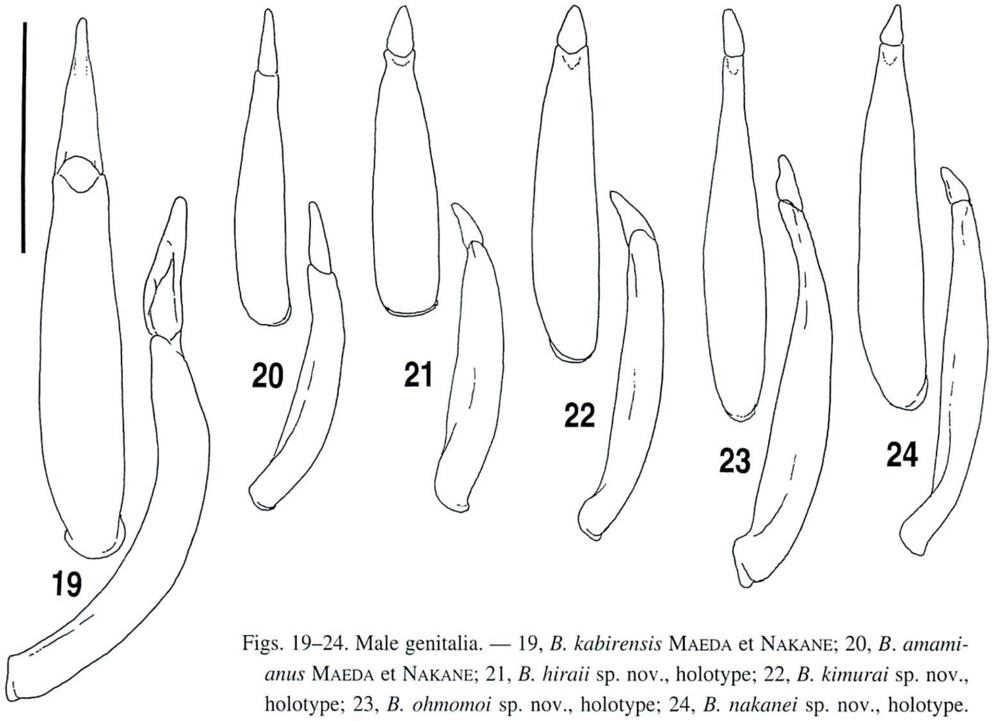
Body elongate-elyptical, rather strongly convex dorsad; head excluding apical part, pronotoum and scutellum dark reddish brown with feeble coppery tinge, elytra, metastenum and abdomen mostly dark brown, anterior part of head, basal parts of antennae, meso- and metasterna, femora and legs mostly reddish brown, apical parts of antennae, mouth parts and tarsi yellowish brown, hairs on dorsal surface dusky yellow with feeble brownish tinge; head and pronotum gently shining, scutellum and elytra weakly, rather sericeously shining, ventral side of neck strongly and vitreously shining, prosternum hardly shining, mesosternum and metasternum gently, somewhat vitreously shining, abdomen weakly and rather sericeously shining; dorsal surface rather densely clothed with recumbent long hairs; ventral surface clothed with recumbent short hairs.

Head subtrapezoidal, closely punctate and clothed with fine hairs; clypeus subquadrate, weakly inclined anteriad, feebly narrowed anteriad and truncate in front, fronto-clypeal border curved and shallowly grooved; genae rather small, subtriangular, feebly produced anterior-laterad, weakly raised in middle, gently declined to eyes; frons feebly convex, weakly inclined anteriad and to eyes, the punctures often confluent with one another in anterior parts. Eyes transversely subreniform in dorsal view, gently convex exteriad, with interior parts comparatively narrowly and roundly inlaid into head. Antennae filiform, reaching basal 1/3 of elytra, ratio of the length of each segment from base to apex: 0.34, 0.13, 0.48, 0.64, 0.54, 0.50, 0.48, 0.54, 0.45, 0.45, 0.44.

Pronotum subtrapezoidal in dorsal view; apex roundly produced anteriad, almost wholly and finely rimmed; base wholly finely bordered, weakly produced in medial part, feebly truncate in front of scutellum, rather noticeably sinuous on each side; front angles rounded, scarcely seen from above, hind angles subrectangular with rounded corner in dorsal view; sides gently declined to lateral margins, which are finely bordered and visible in whole areas from above; disc moderately convex, closely and feebly umbilicately punctate, each puncture with a recumbent long hairs, these in lateral parts becoming bolder than those in central part. Scutellum triangular with feebly rounded sides, very weakly convex in medial part, shallowly punctulate, sparsely covered with fine long hairs.

Elytra about 1.7 times as long as wide, 3.4 times the length and 1.3 times the width of pronotum, widest at basal 2/7; dorsum rather strongly convex, highest at basal 2/7; disc puncto-striate, the punctures in striae small and closely set; intervals weakly convex, very feebly covered with isodiametric microsculpture, scattered with small, somewhat transverse punctures, each with a minute protrusion at the anterior edge and a recumbent long hair; humeri weakly swollen; apical part gently rounded.

Terminal segment of maxillary palpi widened subsecuriform, with interior side shortest and weakly rounded, exterior side nearly straight and about 1.5 times in length of interior, and apex slightly curved and 1.7 times of the same. Ventral side of neck noticeably convex, polished. Prosternum wrinkled; mesosternum coarsely ruguloso-punctate; metasternum weakly covered with isodiametric microsculpture, scattered with punctures, each with a recumbent short hair. Abdomen mostly, weakly covered with isodiametric microsculpture and longitudinally wrinkled, rather closely, finely punctate, each with a recumbent fine hair; 5th sternite semicircu-



Figs. 19–24. Male genitalia. — 19, *B. kabirensis* MAEDA et NAKANE; 20, *B. amamianus* MAEDA et NAKANE; 21, *B. hiraii* sp. nov., holotype; 22, *B. kimurai* sp. nov., holotype; 23, *B. ohmomoi* sp. nov., holotype; 24, *B. nakanei* sp. nov., holotype. Scale = 1 mm.

larly emarginate at apex in male.

Legs moderate-sized and ordinary in shape in the members of this genus; 3rd and 4th segments of pro- and mesotarsi rather noticeably dilated towards each apex, 3rd the widest; metatarsi with 3rd segment feebly widened; ratios of lengths of pro-, meso- and metatarsal segments: 0.40, 0.18, 0.19, 0.25, 0.45; 0.60, 0.25, 0.23, 0.28, 0.49; 1.10, 0.33, 0.27, 0.48.

Male genitalia slender, about 1.8 mm in length and 0.3 mm in width, gently curved in lateral view; basal piece prolonged and narrowed in anterior 1/3; fused parameres sublinguiform in dorsal view, 0.3 mm in length.

Body length: 7.9–9.3 mm.

Type series: Holotype. ♂, Ishigaki-jima Is., Mt. Buzama-dake, 17. IV. 1998, S. OHMOMO leg. Paratypes. Ishigaki-jima Is.: 1♀, same data as the holotype; 1♂, Arakawa, 18. VI. 1995, C. ENDÔ leg.; 1♂, 1♀, Yonehara, 1–7. V. 1994, H. OTOBE leg.; Iriomote-jima Is.: 1♂, Aira-gawa Riv., 23. III. 1999, S. INADA leg.; 1♀, ditto, 4. V. 2003, H. OTOBE leg.; 1♂, ditto, 28. IV. 2003, T. KURIHARA leg.; 1♂, Nakama-gawa Riv., 1. V. 1994, H. OTOBE leg.; 1♀, Haemida, 5. V. 2003, H. OTOBE leg.

Distribution. Ishigaki-jima Is., Iriomote-jima Is.

This species is named in honor of Dr. S. OHMOMO, who collected the holotype of the present new species.

Borboresthes nakanei sp. nov.

[Japanese name: Nakane-tobiiro-kuchikimushi]
(Figs. 6, 12, 18, 24)

Body elongated-elliptical, rather strongly convex dorsad; dark reddish brown to dark yellowish brown, apical part of head, mouth parts, antennae and legs brownish yellow, hairs on dorsal surface dusky yellow with feeble brownish tinge; head, pronotum, antennae, major ventral parts and legs genty shining, scutellum and elytra feebly sericeously shining; dorsal surface densely clothed with decumbent, rather long hairs; ventral surface sparsely clothed with recumbent short hairs.

Head subtrapezoidal and gently convex in middle, very weakly covered with isodiametric microsculpture, closely, somewhat umbilicately punctate and clothed with fine hairs; clypeus subquadrate, defined from frons by curved fronto-clypeal border, with anterior part produced, feebly narrowed anteriad and truncate in front; genae rather small, subtriangular, feebly produced laterad, very weakly raised in middle, depressed in posterior parts before eyes, ruguloso-punctulate in interior parts and impunctate in marginal parts; frons feebly convex, weakly inclined anteriad; areas near eyes weakly depressed, shallowly grooved along eyes. Eyes transversely subreniform in dorsal view, gently convex exteriad, with interior parts narrowly inlaid into head. Antennae filiform, reaching basal 1/3 of elytra, ratio of the length of each segment from base to apex: 0.24, 0.19, 0.46, 0.50, 0.40, 0.42, 0.42, 0.40, 0.40, 0.36, 0.42.

Pronotum subtrapezoidal in dorsal view, very weakly covered with isodiametric microsculpture, very closely, rather umbilicately punctate, covered with recumbent, rather long hairs; apex roundly produced anteriad, almost wholly, finely rimmed; base wholly bordered and rimmed, weakly produced in medial part, feebly emarginate in front of scutellum, rather noticeably sinuous and impressed on each side of the production; front angles rounded but hardly seen from above, hind angles subrectangular in dorsal view; sides steeply declined to lateral margins in anterior parts, gently so in lateral margins, which are finely bordered; disc moderately convex, closely and somewhat umbilicate-punctate, each puncture with a recumbent long hair; the hairs in interior-medial parts being shorter and finer than those in anterior-lateral parts. Scutellum sublinguiform, feebly convex, feebly asperate, closely covered with fine hairs.

Elytra about 1.7 times as long as wide, 3.5 times the length and 1.3 times the width of pronotum, widest at basal 1/3; dorsum rather strongly convex, highest at basal 3/8; disc puncta-to-striate, the punctures in striae small, slightly ovate and closely set; intervals feebly convex, weakly covered with isodiametric microsculpture, rather closely scattered with small punctures, each with a minute protrusion at the anterior edge and a recumbent long hair, the hairs in interior-medial parts being shorter and finer than those in anterior-lateral parts; humeri weakly swollen; apical parts rounded.

Terminal segment of maxillary palpi missing in the holotype. Ventral side of neck polished. Prosternum ruguloso-punctulate, almost asperate; mesosternum ruguloso-punctulate to wrinkled; metasternum scattered with punctures, each with a fine short hair. Abdomen closely, finely punctate, each with a fine short hair, basal and lateral parts of 1st to 3rd sternites longitudinally wrinkled, 5th male sternite weakly depressed in apical part, with rounded at apex.

Legs moderate-sized and ordinary in shape in the members of this genus; pro- and mesotarsi with 3rd and 4th segments rather noticeably dilated towards each apex, respectively, protarsi with 3rd segment largest, mesotarsi with 4th segment largest, metatarsi with 3rd segment gently widened; ratios of lengths of pro-, meso- and metatarsal segments: 0.29, 0.18, 0.20, 0.24, 0.40; 0.43, 0.19, 0.20, 0.25, 0.45; 0.80, 0.28, 0.30, 0.38.

Male genitalia extremely elongated fusiform, about 1.6 mm in length and 0.25 mm in width, weakly curved in lateral view; basal piece gradually narrowed towards the border of parameres; fused parameres elongated subtriangular in dorsal view, gently weakly ventrad, 0.24 mm in length, subnib-shaped.

Body length: 6.2–7.4 mm.

Type series. Holotype. 1♂, Ishigaki-jima Is., Kabira, 13. V. 1973, T. NAKANE leg. (NSMT-I-C 42973). Paratypes. Ishigaki-jima Is.: 1♀, same data as the holotype (NSMT-I-C 42971); 2♀♀, ditto, 23. V. 2001, T. SHIMADA leg.; 1♀, Mt. Buzama-dake, 17. IV. 1998, S. Ohmomo leg.; 1♂, Yonehara, 26. V. 2001, T. SHIMADA leg.; 1♀, ditto, 23. V. 2003, J. OKAMURA leg.; 1♂, 1♀, ditto, 6–9. V. 2004, H. OTOBE leg.; 1♂, ditto, 3. V. 2005, H. OTOBE leg.; 1♂, ditto, 7. V. 1993, K. AKITA leg.; 1♀, Yoshihara, 4–5. V. 1994, H. OTOBE leg.; Iriomote-jima Is.; 1♀, Haemida, 5. V. 2003, H. OTOBE leg.; 1♀, Hoshinosuna Camp site, 16–17. V. 2001, T. SHIMADA leg.

Distribution. Ishigaki-jima Is., Iriomote-jima Is.

The specific name is dedicated to the late Dr. T. NAKANE, who studied the Alleculinae of the Ryukyu Islands, and collected the type materials of the present new species.

Key to the Species of the Genus *Borboresthes* from the Ryukyu Islands

1(2) Antennae slender, reaching beyond the middle of body length in male, or about the half of the same in female. Male genitalia with basal piece strongly curved in middle in lateral view; parameres very long, about 28% the whole length of genitalia. Body length: 8.2–9.5 mm. Ishigaki-jima Is., Iriomote-jima Is. ·········· *Borboresthes kabirensis* MAEDA et NAKAE

2(1) Antennae not beyond the middle of body length even in male. Male genitalia with basal piece weakly curved in lateral view; fused parameres less than 20% the whole length of male genitalia ··3

3(4) Male genitalia with basal piece prolonged and narrowed in anterior 1/3; fused parameres sublinguiform in dorsal view. Body length: 7.9–9.3 mm. Ishigaki-jima Is., Iriomote-jima Is. ·· *B. ohmomoi* sp. nov.

4(3) Male genitalia with basal piece not narrowed in anterior 1/3 ······························ 5

5(6) Elytra with sutural parts lighter in color; fused parameres elongate, about 20% the whole length of genitalia. Body length: 7.0–7.5 mm. Amami-ôshima Is., Okinoerabu-jima Is. ······ ·· *B. amamianus* MAEDA et NAKANE

6(5) Elytra wholly dark brown to dark grayish brown; fused parameres short, less than 17% the whole length of genitalia ·· 7

7(8) Pronotum and elytra dark grayish brown. Male genitalia with basal piece bold in major basal part, rather strongly narrowed anteriad; fused parameres somewhat nib-shaped, about 17% whole length of genitalia. Body length: 7.2–8.6 mm. Amami-ôshima Is., Takara-jima Is. ·· *B. hiraii* sp. nov.

8(7) Pronotum and elytra dark reddish brown to dark yellowish brown. Male genitalia elongated fusiform, with basal pieces not strongly narrowed anteriad; fused parameres about 10–12% the whole length of genitalia ·· 9

9(10) Male genitalia elongated fusiform, fused parameres long, about 12% the whole length of genitalia, somewhat nib-shaped. Body length: 7.0–7.6 mm. Tarama-jima Is.································ *B. kimurai* sp. nov.

10(9) Male genitalia extremely elongated fusiform, fused parameres short, about 10% the whole length of genitalia, elongated subtriangular. Body length: 6.2–7.4 mm. Ishigaki-jima Is., Iriomote-jima Is. ································ *B. nakanei* sp. nov

要約

秋田 勝己・益本 仁雄：日本産ゴミムシダマシ科甲虫の新種・稀少種 (第 7 報)・琉球列島産 トビイロクチキムシ属（ゴミムシダマシ科クチキムシ亜科）の再検討.———琉球列島産トビイロクチキムシ属 *Borboresthes* は，これまで西表島から *B. fuliginosus* FAIRMAIRE, 1897 ミナミトビイロクチキムシ（カバイロクチキムシ）(MIWA, 1933)，奄美大島から *B. amamianus* MAEDA et NAKANE, 1988 アマミトビイロクチキムシ，石垣島から *B. kabirensis* MAEDA et NAKANE, 1988 イシガキトビイロクチキムシが知られている．このうち，*B. fuliginosus* は中国・四川省のものであることから，同定間違いであると考えられる．

著者らは，今回，琉球列島産の本属の種を再検討し，MAEDE et NAKANE (1988) の 2 種のほかに 4 新種を見出したので，*B. hiraii* sp. nov. ヒライトビイロクチキムシ（奄美大島，宝島），*B. kimurai* sp. nov. タラマトビイロクチキムシ（多良間島），*B. ohmomoi* sp. nov. オオモモトビイロクチキムシ（石垣島，西表島），*B. nakanei* sp. nov. ナカネトビイロクチキムシ（石垣島，西表島）として命名記載し，これに全 6 種の検索表を付した．また，沖永良部島から *B. amamianus* を，西表島から *B. kabirensis* を記録した．

References

AZUMA, S. (ed.), S. AZUMA, M. YAFUSO, M. KINJO, M. HAYASHI, T. KOHAMA, T. SASAKI, M. KIMURA. & F. KAWAMURA, 2002. Check List of the Insect of the Ryukyu Islands (Second Edition), the Biological Society of Okinawa, Nishihara, Okinawa, xxiv+570 pp. (In Japanese, with English book title.)

FAIRMAIRE, L., 1897. Coléoptères du Szé-tchouen et de Koui-Tchéou (China). *Notes from the Leyden Museum*, **19**: 241–255.

KIMOTO, T., 2004. Distribution Records of Alleculinae. *Coleopterists' News*, (145): 7–14. (In Japanese.)

MAEDA, M. & T. NAKANE, 1988. New or Little-known Coleoptera from Japan. *Review of Miyazaki Sangyô-keiei University*, **1**(1): 1–10.

MIYATAKE, M., 1985. Alleculidae. *In*: KUROSAWA, Y. *et al.* (eds.), The Coleoptera of Japan in Color, **3**: 346-348 [incl. pl. 59]. Hoikusha, Osaka. (In Japanese, with English book title.)

MIWA, Y., 1933. An enumeration of Coleoptera from the island Iriomote in Loochoo, with descriptions of new species (The Coleopteran fauna of Loochoo, I). *Transection of the Natural History Society of Formosa*, **23**: 4–11.

SASAJI, H., 1989. Alleculidae. *In*:: HIRASHIMA, Y., *et al.* (eds.). A Check List of Japanese Insects [1]: 418–419. Kyushu University. (In Japanese with English book title.)

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A New Synonym of *Gonocephalum* (Coleoptera, Tenebrionidae) from Japan

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During the course of a revisional study concerning the Japanese Tenebrionidae, the authors examined species of the genus *Gonocephalum* from Japan. KASZAB (1952) described *Gonocephalum coenosum* from various areas of East Asia including Japan. Meanwhile, M. T. CHÛJÔ (1995) described *Gonocephalum ficifolium* from Shikoku, Kyushu and W. Honshu.

From their friends of entomological study, the authors were offered many undetermined specimens collected from West Japan, which were similar to both the above mentioned species. Dr. Ottó MERKL permitted them to examine the type series of *Gonocephalum coenosum* KASZAB, 1952, preserved in the Hungarian Natural History Museum. The authors carefully compared these two species, and finally concluded that the latter is a synonym of the former.

The authors wish to express their cordial thanks to Dr. O. MERKL and Dr. Kiyoshi ANDO (Osaka), for loaning invaluable types for the present study. They also thank Messrs. Keitarô HARUSAWA (Osaka), Masaaki KIMURA (Okinawa), Isao MATOBA (Wakayama), Seiji MORITA (Tokyo), Shingo NAKAMURA (Hiroshima), Tadafumi NAKATA (Okinawa), Nobuyasu NISHIOKA (Osaka), Naoki TODA (Aichi) and P. JAŁOSZYŃSKI (Poland), for supporting the present study.

Gonocephalum coenosum KASZAB, 1952

Gonocephalum coenosum KASZAB, 1952, Ent. Arb. Mus. Frey, **3**: 643–646, figs. 413–415.

Opatrum (*Gonocephalum*) *japanum*: MARSEUL, 1876, Annls. Soc. ent. Fr., (5), **6**: 96 (nec MOTSCHULSKY, 1861 [1860])

Gonocephalum recticolle: KASZAB, 1941, Stettin. ent. Ztg., **102**: 51 (nec MOTSCHULSKY, 1866)

Gonocephalum ficifolium M. T. CHÛJÔ, 1995, Esakia, Fukuoka, (35): 113, figs. A–F., [**Syn. nov.**]

Specimens examined (Type series). Holotype of *G. coenosum* KASZAB: ♂, China / Thinthong // Holotypus 1952 ♂ / *Gonocephalum* / *coenosum* / Kaszab. Paratypes of *G. coenosum* Kaszab: 1 ex., Tsche-kiang / Ning-Po // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1ex., Thintong / China / J. Xantus // 305 / F56 // Paratypus 1952 / *Gonocephalum* /

coenosum / Kaszab; 1ex. China / Thintong // Paratypus 1952 / *Gonocephalum* / *coenosum* / KASZAB; 1 ex., Namoa I., / S. E. China / J. J. Walker // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ex., Canton (China) / 23. I. 09 / R. Mell. S. G. // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 2 exs., Formosa / Sauter // Takao 907 // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ex., Formosa / Sauter // Takao 1907. IX. 4. // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ex., Formosa / Sauter // Pilam 08/ I 1-15. // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ex., Formosa / Sauter // Kagi / 907. VIII. 10. // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ex., Formosa / Sauter // Tainan 909. II. // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ex., Formosa / Sauter // Takao / 1907. V. 11. // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ♂, Takao / 907. // Formosa / Sauter // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab; 1 ♂, Prov. Fo-Kien / (China). / G. Siemssen vend. / 31. V. 1904. //*Gonoceph.* / *coenosum* Blair / H. Gebien 1932 // Paratypus 1952 / *Gonocephalum* / *coenosum* / Kaszab. Paratypes of *Gonocephalum ficifolium* M.T. Chûjô: 2 ♂♂, 2 ♀♀, [SHIKOKU] / (Fig vinyl house) / Takamatsu, Kagawa / 22. II. 1994. / coll. E. Matsumoto // Paratype / *Gonocephalum* / *ficifolium* / M. T. Chujô, 1994.

Other specimens examined. Korea: 1 ♀, Quelpaert / Coree // dulu / 1655 // *coenosum* /Kasz. / det. Kaszab. Japan: 1 ♀, Nara-ken, Nara-shi, Kasuga-yama, 140–340m, 29. IV. 2003, K. AKITA leg.; 1 ♂, 1 ♀, Osaka-fu, Osaka-shi, Osakajô-kôen, Shûdôkan, 29. IX. 2007, A. KURODA leg.; 1 ♂, Osaka-shi, Osakajô-kôen, 6. V. 2007, M. ARAKAWA leg.; 2 ♂♂, 4 ♀♀, Osaka Pr. Sakai C. Higashi-uenoshiba Chô, Sakai handicapped School of Osaka Pref., 7. XII. 2007, K. HARUSAWA leg.; 1 ♂, 1 ♀, ditto, 1. XII. 2007, K. HARUSAWA lgt.; 1 ♀, Osaka-fu, Yao-shi, Gakuonji, 25. X. 1998, N. NISHIOKA leg.; 3 exs., Hyôgo-ken, Himeji-shi, Uchikoshi, 21. VII. 2008, K. AKITA leg.; 1 ♂, Kose-gawa, st. 2, Hiroshima Pref., 24. VII. 1996, S. NAKAMURA leg.; 2 ♀♀, Ashida-gawa, st. 7, Hiroshima Pref., 16. VII. 1997, S. NAKAMURA leg.; 1 ♂, 2 ♀♀, Oota-gawa, st. 1, Hiroshima Pref., 6. X. 1998, S. NAKAMURA leg.; 1 ♀, Enokawa, st. 3, Shimane Pref., 12. VIII. 1999, S. NAKAMURA leg.; 5 exs., Kagawa-ken, Takamatsu-shi, Iida-chô, 25. VI. 2008, K. AKITA leg.; 8 exs., Kagawa-ken, Mitoyo-shi, Takase-chô, 21. VII. 2008, K. AKITA leg.; Ryukyus: 3 exs., Tarama-jima Is., 3. VI. 1996, M. KIMURA leg.; 1 ex., ditto, 13. VIII. 1996, M. KIMURA leg.; 1 ex., ditto, 3. X. 1996, M. KIMURA leg.; 1 ex., Shimoji-jima Is., 11. II. 1999, M. MURAMATSU leg.; 1 ♂, 1 ♀, Ishigaki Is., SW coast, 50m from sandy beach, 31. XII. 2002, P. JAŁOSZYŃSKI leg.; 4 exs., ditto ; 2 exs., Ishigaki-jima Is., Kabira, 23. II. 1965, H. YOKOYAMA leg.; 1 ♀, ditto, 20. II. 2003, T. NAKATA leg.; 1 ex., ditto, 7. V. 1993, K. AKITA leg.; 1 ex., Ishigaki-jima Is., Yonehara, 18. V. 1991, M. KIMURA leg.; 2 exs., Ishigaki Is. 29. II. 1976, M. MORITA leg.; 2 exs., Taketomi-jima Is., Kondoi Beach, 3. V. 2004, N. TODA leg.; 1 ex., Kohama-jima Is., 27. III. 2003, I. MATOBA leg.

要　約

秋田 勝己·益本 仁雄：日本産スナゴミムシダマシ属（ゴミムシダマシ科）の１シノニムについて. ——— ヤマトスナゴミムシダマシ *Gonocephalum coenosum* KASZAB, 1952は，中国，日本（本州，四国，九州，対馬），朝鮮半島から記載された種である．M. T. CHÛJÔ (1995) は，これに近似の別種として四国，九州，本州からシコクスナゴミムシダマシ *G. fucifolium* を記載した．筆者らはヤマトスナゴミムシダマシのホロタイプを含む多数のタイプシリーズ，シコクスナゴミムシダマシのパラタイプならびに基準産地である香川県高松市周辺で得られた多数の標本を含む西日本各地産の標本を検討した．その結果，これらは同一種であるという結論に達した．そこで後者を前者のシノニムとして処理した．

References

CHÛJÔ, M. T., 1995. *Gonocephalum ficifolium*, a new species of Tenebrionidae from Japan (Coleoptera). *Esakia, Fukuoka*, (35): 113, figs. A–F.

KASZAB, Z., 1941. Tenebrioniden aus Formosa (Col.). *Stettiner entomologische Zeitung*, **102**: 51–52

KASZAB, Z., 1952. Die indomalaischen und ostasiatischen Arten der Gattung *Gonocephalum* SOLIER (Coleoptera, Tenebrionidae). *Entomologische Arbeiten aus dem Museum Frey*, **3**: 416–688.

MARSEUL, S. A. de, 1876. Coléoptères du Japon recueilles par M. Georges LEWIS. Énumération des Hétéromères avec la descriptions des espèces nouvelles. *Annales de la Société Entomologique de France* (5) **6**: 93–142.

MOTSCHULSKY, V. de, 1861. Insectes du Japon. *Études entomologique*, **9** [1860]: 4–39.

MOTSCHULSKY, V. de, 1866. Catalogue des insects reçus de Japon. *Bulletin de la Société Impériale des Naturalistes de Mowcou*, **39**: 163–200.

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Notes on the Subfamily Sphaeridiinae (Coleoptera: Hydrophilidae) from Korea, Part I

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Abstract Four species belonging to the subfamily Sphaeridiinae (Coleoptera: Hydrophilidae) [*Peratogonus reversus* SHARP, 1884, *Armostus nigricans* HOSHINA et SATÔ 2006, *Pacrillum manchuricum* d'ORCHYMONT, 1941, and *Megasternum gibbulum* MOTSHULSKY, 1866] are recorded for the first time from Korea. As a result of this study, the number of Korean sphaerids species becomes fifteen.

In Korea, 11 species belonging to the subfamily Sphaeridiinae of the family Hydrophilidae have been known to occur (LEE *et al.*, 1988; LEE *et al.*, 1990, 1992, 1993; KIM *et al*, 1994; HANSEN, 2004). Recently, we examined some specimens included in beetle's collections of our universities and found four named species which have not been recorded from Korea. In this paper, we add them to the Korean fauna of Sphaeridiinae.

Before going further, we wish to express our sincere gratitude to K.-J. AHN (Chungnam National University, Daejeon City) for his continuous help.

Peratogonus reversus SHARP, 1884

Peratogonus revesus SHARP, 1884: 461; ——KNISCH, 1921: 86; ——HANSEN, 1999: 268; ——HANSEN, 2004: 67.

Specimens examined. 2 exs., Chungnam National University, Yuseong-gu, Daejeon City, Chungnam Prov., 18 VI.–15. VII. 2003, J.-H. CHOI, D.-H. LEE, and S.-M. CHOI leg. (by flight intercept traps).

Distribution. Japan, Taiwan and Korea.

Remarks. This species is recorded for the first time from Korea.

Armostus nigricans HOSHINA et SATÔ, 2006

Armostus nigricans HOSHINA et SATÔ, 2006: 97.

Specimen examined. 1 ex., Goepyeoioreum, Namjejugun, Jeju Prov., 28. V–27. VI. 2003, Y.-B. CHO, S.-J. PARK, and C.-W. SHIN leg. (by flight intercept traps).

Distribution. Japan and Korea.

Remarks. This species is recorded for the first time from Korea.

Pacrillum manchuricum d'ORCHYMONT, 1941

Pacrillum manchuricum d'ORCHYMONT, 1941: 17; ——HANSEN, 1999: 304; ——HOSHINA & M. SATÔ, 2004: 234; ——HANSEN, 2004: 66.

Specimens examined. 1 ex., Seoguipo-shi, Jeju-do, 5. IX. 1995, K.-S. LEE leg. (by light traps); 1 ex., Mt. Odasan, Myosan-myun, Habchon-gun, Kyungsangnam-do, 13–14. VII. 2000, Y.-B. CHO leg. (by bait traps).

Distribution. Japan, Korea and China.

Remarks. This species is recorded for the first time from Korea.

Megasternum gibbulum MOTSCHULSKY, 1866

Megasternum gibbulum MOTSCHULSKY, 1866: 169; ——SHARP, 1884: 464; ——HANSEN, 1999: 305; ——HANSEN, 2004: 66; ——HOSHINA & M. SATÔ, 2005: 13.

Megasternum japonicum SHATROVSKIY, 1989: 286; ——SHATROVSKIY, 1992: 368; ——HANSEN, 1999: 305; ——HANSEN, 2004: 66; ——HOSHINA & M. SATÔ, 2005: 13 (= *M. gibbulum*).

Specimen examined. 1 ex., Mt. Odaesan, Jinbu-myeon, Pyeongchang-gun, Gangwon Prov., 31. V. 2008, H. HOSHINA leg. (by beating).

Distribution. Japan and Korea.

Remarks. This species is recorded for the first time from Korea.

要約

保科 英人・趙 永福：韓国産ガムシ科ハバビロガムシ亜科に関する知見 Part I. ———今まで韓国産ハバビロガムシ亜科は 11 種が知られていた．本稿にて，*Peratogonus reversus* SHARP, 1884（和名：コウセンマルケシガムシ），*Armostus nigricans* HOSHINA et SATÔ, 2006（和名：セグロオカツヤガムシ），*Pacrillum manchuricum* d'ORCHYMONT, 1941（ズグロセダカガムシ），及び *Megasternum gibbulum* MOTSHULSKY, 1866（セマルマグソガムシ）の 4 種を新たに追加した．

References

d'ORCHYMONT, A., 1941. Palpicornia (Coleoptera). Notes diverses et espéces nouvelles I. *Bulletin du Musée royal d'Histoire naturelle de Belgique*, **17**: 1–23.

HANSEN, M., 1999. Hydrophiloidea (s. str.) (Coleoptera). *In*: World Catalogue of Insects, 2. 416 pp. Apollo

Books, Stenstrup.

HANSEN, M., 2004. The family Hydrophilidae, 44-68. *In*: LÖBL, I. & SMETANA, A. (Eds.). Catalogue of Palaearctic Coleoptera, vol. 2. 942 pp. Apollo Books. Stenstrup.

HOSHINA, H. & M. SATÔ, 2004. First record of the genus *Pacrillum* (Coleoptera: Hydrophilidae) from Japan, with a redescription of *P. manchuricum*.. *The Entomological Review of Japan*, **59**: 233–239.

HOSHINA, H. & M. SATÔ, 2005. Synonimic notes on two species of the families Hydrophilidae and Leiodidae (Coleoptera) from Japan. *The Entomological Review of Japan*, **60**: 13–16.

HOSHINA, H. & M. SATÔ, 2006. A taxonomic study of the genus *Armostus* (Coleoptera: Hydrophilidae) from Japan. *The Coleopterists Bulletin*, **60**: 95–104.

KIM, J.-I., Y.-J. KWON, J.-C. PAIK, S,-M. Lee, S.-J. AHN, H.-C. PARK, & H.-Y. CHU, 1994. Order 23. Coleoptera. p 117-214. *In*: The Entomological Society of Korea and Korean Society of Applied Entomology (ed.). Check list of insects from Korea. 744 pp. Kon-Kuk University Press, Seoul.

KNISCH, A., 1921. Die exotischen Hydrophiliden des Deutschen Entomologischen Museums (Col.). *Archiv für Naturgeschichte*, **85**, A (8): 55–88.

LEE, S.-H., Y.-B. CHO, and C.-E. LEE, 1990. Some addition to the Hydrophilidae of Korea (Coleoptera). *Nature and Life, Korea*, **20**: 1–7.

LEE, S.-H., Y.-B. CHO, and C.-E. LEE, 1992. The water beetles of Quelpart Island (Coleoptera). *Nature and Life, Korea*, **22**: 45–60.

LEE, S.-H., Y.-B. CHO, and C.-E. LEE, 1993. Some addition to the Hydrophilidae of Korea II (Coleoptera). *Nature and Life, Korea*, **23**: 145–149.

LEE, S.-H., C.-E. LEE, and H.-C. PARK, 1988. A taxonomy of the aquatic Hydrophilidae of South Korea (Coleoptera). *Nature and Life, Korea*, **18**: 79–91.

MOTSCHULSKY, V., 1866. Catalogue des Insects reçus du Japon. *Bulletinde la Société impériale des Naturalistes de Moscou*, **39**, 1: 163–200.

SHARP, D., 1884. The water-beetles of Japan. *Transactions of the Entomological Society of London*, **1884**: 439–464.

SHATROVSKIY, A. G., 1989. Hydraenidae, Hydrophilidae (pp. 260-293). *In*: LER, P. A. (ed.). Operedelitel'-nasekomykh Dal'nego Vostoka SSSR v shesti tomakh. Vol. 3. Zhestkokrylye, ili zhuki (part 1). 572 pp. Nauka, Leningrad. (in Russian)

SHATROVSKIY, A. G., 1992. Novye i moloizvestnye vodolyubovye (Coleoptera, Hydrophiloidea) iz yuzhnogo Primor'ya i sopredel'iykh territorii. *Éntomologicheskoe Obozrenie,* **71**: 359–371. (in Russian)

Ent. Rev. Japan, **63** (2): 129–134, December 25, 2008

Spectrophotometric Analysis of Dorsal Coloration in *Phelotrupes auratus* (Coleoptera: Geotrupidae): Comparisons between Populations, Sexes and Beetles with Varying Extents of Wear

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Abstract We investigated color variation of the dorsal elytral surface of *Phelotrupes auratus* on the materials collected from four sites in the Kinki district of central Japan (Otsu, Konze and Inukami, Shiga Prefecture and Matsuzaka, Mie Prefecture), using a spectrophotometer to determine spectral reflectance. The examined beetles were classified into two groups according to the extent of protibial wear. We then compared the values of λ max(α), the wavelength at the highest reflectance peak (α peak) within the 400–700 nm visible region, and observed significant differences in the λ max(α) between populations, sexes and beetles with varying extents of protibial wear. The Otsu population had the largest values of average λ max(α), followed by the Inukami and Konze populations, and the Matsuzaka population had the smallest values. Average λ max(α) values were slightly larger in males than in females, and in beetles with the worn tibiae than in those with the unworn tibiae.

Phelotrupes auratus (MOTSCHULSKY) (Coleoptera, Geotrupidae) is a coprophagous beetle distributed throughout the Japanese islands, the Korean Peninsula, northeastern China and the Russian Far East (LÖBL, *et al.* 2006), which exhibits marked geographic variation in coloration (MIZUNO, 1964). Based on visual assessments of coloration, several previous studies have recognized such three color forms as 'red', 'green' and 'indigo' for populations in the Kinki district of central Japan (NAKANE, 1952; HOGA, 1986; YAMAMOTO, 2002). WATANABE *et al.* (2002) quantitatively analyzed color variation in this species using a spectrophotometer and found that λ max(α), the wavelength of reflectance peak (α peak) in the visible region (400–700 nm), was an optimal parameter for discriminating between populations of the three color forms.

Newly emerged adults of *P. auratus* appear in August or later, and possibly breed the following year after overwintering (HOGA, 1987). Adults of *P. auratus* bury dung in an underground tunnel for their own consumption or for rearing larvae (HOGA, 1987). Adults collected in August or later are found to exhibit varying extents of protibial wear, and it is considered that

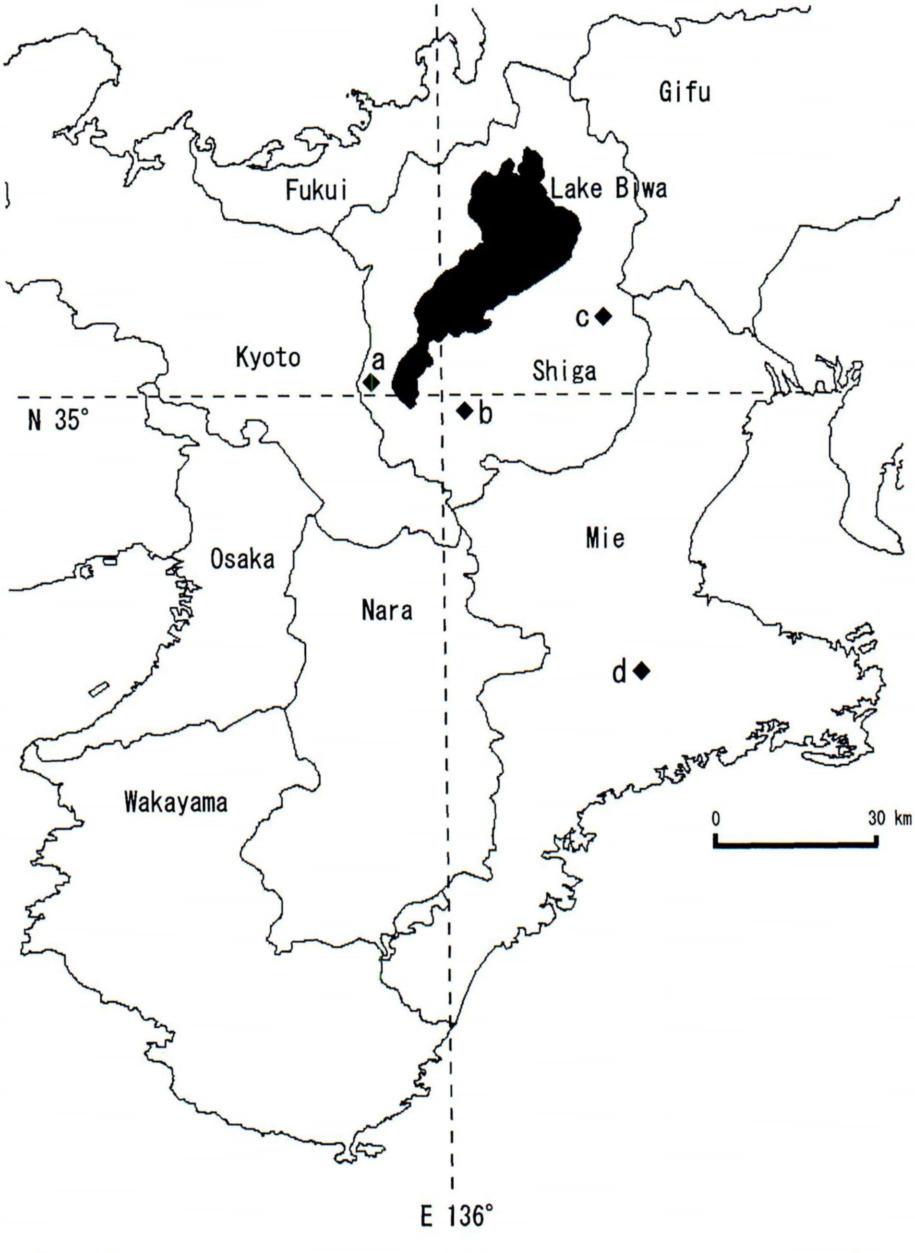

Fig. 1. Map of the Kinki district in central Japan showing the sites where samples were collected. a, Otsu; b, Konze; c, Inukami; d, Matsuzaka.

beetles with the unworn protibiae are newly emerged adults while beetles with the worn protibiae are older, and that the extent of protibial wear reflects the extent of previous digging activity by the adults (HOGA, 1987). In addition, the elytra of *P. auratus* adults with the worn protibiae appear less brilliant to the human eyes than those with the unworn protibiae (personal observation).

In the present study, in order to elucidate variation of the λ max(α) in *P. auratus*, we compared the λ max(α) values between populations, sexes and beetles with varying extents of protibial wear for beetles from four collection localities in the Kinki district of central Japan.

Materials and Methods

Adults of *P. auratus* were collected using traps baited with cow dung from four sites (Otsu, Konze and Inukami in Shiga Prefecture and Matsuzaka in Mie Prefecture) in the Kinki district of central Japan (Fig.1) between August and October in 2005 and 2006 (see collection data in Appendix). Based on the state of protibiae, the collected beetles were classified into two groups 'unworn' (beetles with the teeth on the outer margin of protibia that were apparently intact) or 'worn' (beetles with the protibial teeth that exhibited signs of wear).

We measured the elytral surface reflectance spectra of dried specimens using a spectrophotometer (UV-240; Shimadzu, Japan) following the methods of WATANABE *et al.* (2002). The wavelength of the highest reflectance peak within the 400–700 nm range, or λ max(α), was measured to an accuracy of 1 nm. After logarithmic transformation, differences in λ max(α) were assessed between populations, sexes, and beetles with the unworn and worn protibiae, using a 3-factor ANOVA. Thereafter, variation between populations was assessed using the Tukey test for multiple comparisons.

Results and Discussion

Significant differences in λ max(α) were observed for all three of the factors examined: population, sex and extent of protibial wear (Table 1; Fig. 2), and also confirmed for all combinations of four populations (Tukey test: $P < 0.05$).

Table 1. Results of 3-factor ANOVA

Source of variation	DF	MS	F	P
Population (factor A)	3	0.430	586.41	***
Sex (factor B)	1	9.0×10^{-3}	12.17	***
Extent of protibial wear (factor C)	1	9.2×10^{-3}	12.38	***
A x B	3	3.9×10^{-5}	0.05	NS
B x C	1	1.5×10^{-3}	2.02	NS
C x A	3	7.5×10^{-4}	1.01	NS
A x B x C	3	1.3×10^{-4}	0.17	NS
Error	110	7.4×10^{-4}		

DF, dgrees of freedum; MS, mean of square; ***, $P<0.001$; NS, $P>0.05$.

The largest average λ max(α) values were observed in the population from Otsu, which was followed by the population from Inukami. The Matsuzaka population had the smallest values, and the Konze population was intermediate between the Inukami and Matsuzaka populations. To human eyes, beetles of the Otsu population appeared red with a weak greenish luster, those from Inukami red with a strong greenish luster, those from Konze green and those from Matsuzaka indigo (personal observations). The populations from Otsu, Konze and Matsuzaka were classified by several previous authors as the red, green and indigo forms, respectively (YAMAMOTO, 2002; INAGAKI, 2005). According to the schematic map showing the distributions of the three color forms in HOGA (1987), the Inukami population appears to fall within the distribution range of 'green form'. However, the present results showed that the average λ max(α) values of the Inukami population were slightly closer to those of the Otsu population (red form)

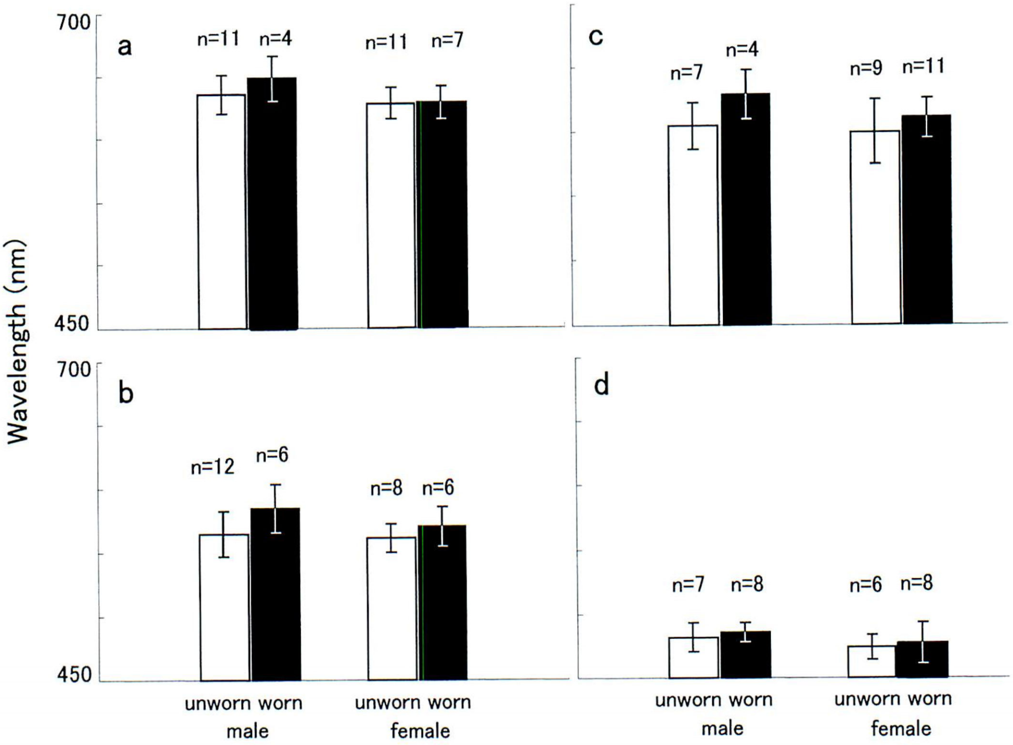

Fig. 2. Average λ max(α) values for beetles from a, Otsu; b, Konze; c, Inukami; d, Matsuzaka; open bar, beetle with the unworn protibiae; closed bar, beetle with the worn protibiae. Sample sizes are shown above each bar. Error bars show standard deviation.

than to those of Konze (green form).

In all of the populations examined, the average λ max(α) values were slightly larger in males compared to females, irrespective of the extent of protibial wear. However, WATANABE *et al.* (2002) did not detect significant differences in λ max(α) between sexes in the three *P. auratus* populations examined in their study (Arashiyama and Mt. Otowa in Kyoto Prefecture and Nara Park in Nara Prefecture). Since the sample sizes used in the study of WATANABE *et al.* (2002) appeared to be sufficient, the disparity between their findings and those of the present study may indicate inter-population variation in sexual dimorphism with respect to λ max(α).

In all four populations, the average λ max(α) values of both sexes were slightly larger in beetles with the worn protibia, possibly resulting from the relatively increased physical wear of the elytral surface due to digging in these beetles. Another possibility is that the λ max(α) value may increase slightly with time after eclosion. However, before discussing the potential reasons for the observed change in the λ max(α) between beetles with varying extents of protibial wear, the mechanism responsible for conferring structural color in *P. auratus* should be elucidated. Two major mechanisms have been reported for conferring structural color in beetles: i.e., interference by multilayered reflectors in the cuticle and that by cholesteric liquid crystals (PARKER, 2005). To our proper understanding of the observed λ max(α) variation in *P. auratus*, further research should be needed to elucidated which of these mechanisms is responsible for conferring the metallic color in *P. auratus*.

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要約

赤嶺 真由美・前川 清人・近　雅博：オオセンチコガネの背面の色彩のスペクトロフォトメーターによる分析．個体群，雌雄および磨耗の程度の異なる個体間の比較．——— 近畿地方の4地点（滋賀県大津，金勝，犬上および三重県松阪）から採集されたオオセンチコガネについて，スペクトロフォトメーターをつかって鞘翅表面の反射スペクトルを測定することにより，その色彩を調べた．測定した個体を，前脛節の磨耗の程度に基づき2つのグループに分類した．可視領域（400–700 nm）におけるスペクトルのピークの波長（λmax(α)）を比較した結果，個体群間，雌雄間および磨耗の程度の異なる個体間のそれぞれに有意差のあることを見い出した．大津の個体群がもっとも大きいλmax(α)の平均値を持ち，それに犬上，金勝のものが続き，松阪のものがもっとも小さい平均値を持っていた．さらに，雄が雌より，そして磨耗した個体がしてないものより，わずかに大きいλmax(α)の平均値を持っていた．

References

Hoga, A., 1986. On the distribution and the coloration of *Geotrupes auratus* Mots. in Kinki district. *Lamellicornia*, **2**: 11–15. (In Japanese.)

Hoga, A., 1987. Life histories of dung beetles, *Geotrupes auratus* and *G. laevistriatus*. *Insectarium*, **24**: 218–222. (In Japanese.)

Inagaki, M., 2005. The distribution and border of *Phelotrupes* (*Chromogeotrupes*) *auratus* from Mie Prefecture. *The Nature & Insects*, **40**: 16–20. (In Japanese.)

Löbl, I., G. V. Nikolajev & D. Král, 2006. Geotrupidae, Geotrupinae. *In*: Löbl, I. & A. Smetana (eds), Catalogue of Palaearctic Coleoptera, 3: 84–92. Apollo Books, Stenstrup.

Mizuno, T., 1964. Geographic variation in the Japanese species of the genus *Geotrupes*. *Iden*, **18**: 24-27. (In Japanese.)

Nakane, T., 1952. On the Scarabaeidae of Japan (II). *The Entomological Review of Japan*, **6**: 21–24. (In Japanese.)

Parker, A. R., 2005. 'Simple' classical optics in animals–reflectors and antireflectors. *In*: Kinoshita, S. & S. Yoshioka (eds.), Structural colors in biological systems Principles and applications., pp. 29–52. Osaka University Press, Osaka.

Watanabe, T., T. Tanigaki, H. Nishi, A. Ushimaru & T. Takeuchi, 2002. A quantitative analysis of geographic color variation in the two *Geotrupes* dung beetles. *Zoological Science*, **19**: 351–358.

Yamamoto, M., 2002. Notes on *Phelotrupes auratus* (Coleoptera, Geotrupidae) from Shiga Prefecture and its adjacent region. *Saikaku Tsûshin*, **5**: 9–16. (In Japanese.)

Appendix

Specimens examined. 2♂♂, 2♀♀ (unworn), 3♀♀ (worn), Otsu, Shiga Prefecture, 14. IX. 2005, M. KON leg.; 9♂♂, 9♀♀ (unworn), 4♂♂, 4♀♀ (worn), ditto, 13–14. X. 2005, M. AKAMINE leg.; 12♂♂, 8♀♀ (unworn), 6♂♂, 6♀♀ (worn), Konze, Ritto, Shiga Prefecture, 6. VIII. 2005, M. AKAMINE leg.; 4♂♂, 1♀(unworn), 1♂, 5♀♀ (worn), Inukami, Hikone, Shiga Prefecture, 6. VIII. 2005, M. HANATSUKA leg.; 3♂♂, 8♀♀ (unworn), 3♂♂, 6♀♀ (worn), ditto, 1–3. IX. 2005, M. AKAMINE leg.; 7♂♂, 6♀♀ (unworn), 8♂♂, 8♀♀ (worn), Matsuzaka, Mie Prefecture, 3. IX. 2006, M. INAGAKI.

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A New Species of the Genus *Caraphia* from Taiwan, with Consideration of the Status of the Genus (Coleoptera: Cerambycidae)

Studies on the Taiwanese Lepturinae, II

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Abstract *Caraphia taiwana* CHOU et N. OHBAYASHI, sp. nov. is described from Taiwan for the eleventh species of the genus. The tribal status of the genus *Caraphia* is briefly reviewed and discussed. A checklist of the species is given with drawings of male genitalia of *C. lepturoides* (MATSUSHITA), *C. ebenina* HOLZSHUH and *C. borneana* VIVES.

Introduction

A distinctive new species of the genus *Caraphia* was found from Taiwan, and we would like to describe it for the second contribution to the Taiwanese Lepturinae.

Up to now, ten species and a subspecies have been included in the genus *Caraphia* (cf. check list on later pages). GAHAN (1906) first established the genus *Caraphia* under the subfamily Lepturinae, and described two species, *C. cribrata* and *C. minor* from Burma. BOPPE, 1921 affiliated *Caraphia* to the group Toxotini in his generic revision of Lepturinae. The third species *C. laticeps* was described by PIC (1922) as a species of the genus *Microrhabdium* KRAATZ (the group Rhagii of the subfamily Lepturinae sensu BOPPE, 1921). Later, it was transferred to the genus *Encyclops* under the Xylosteini by GRESSITT (1951), to the genus *Neosalpinia* by VILLIERS and CHÛJÔ (1970) and to the genus *Caraphia* by HAYASHI and VILLIERS (1985) .

Subsequently the fourth species, *C. lepturoides* (MATSUSHITA, 1933) was recorded from Japan under a new genus, *Neosalpinia*, which was placed in the tribe Callidiopini of the subfamily Cerambycinae. Later on, MITONO (1938) threw doubt on its position and suggested its relationship with the genus *Caraphia*. HAYASHI (1950) proposed to transfer the genus *Neosalpinia* from Cerambycinae to Lepturinae based mainly on the structure of its hind wing venation, and he (1955, 1960) placed it in the tribe Xylosteini in view of the feature of eyes which are coarsely faceted. OHBAYASHI (1963) downgraded *Neosalpinia* to a subgenus of *Caraphia.*

After a blank of 37 years, the fifth species, *Caraphia laosica* was described from Laos by GRESSITT and RONDON (1970) under the tribe Xylosteini. Then HAYASHI and VILLIERS (1985) revised the genus *Caraphia* and placed it in the tribe Xylosteini. Also they added one species from Thailand in 1987. HOLZSCHUH (1984, 1989, 2003) described three species of the genus *Caraphia* under the subfamily Lepturinae from Nepal, Vietnam and Malaysia, but he did not refer to the tribal affiliation. N. OHBAYASHI (1982) first transferred the genus *Caraphia* from Xylosteini to Lepturini. However, we suspected it to be classified in the Lepturini because of its peculiar structure of male genitalia, female reproductive organ (A. SAITO, 1989) and also other external characteristics. In this occasion, we are going to discuss the systematic position of the genus *Caraphia* on later pages because of its instability.

Caraphia taiwana CHOU et N. OHBAYASHI, sp. nov.

(Figs. 1, 2)

Male. Body dark reddish brown; head, antennal scape, prothorax and elytra deeply and closely punctured with scale-like pale yellow hairs arising from the punctures; the hairs slightly curved and recumbent on the head, scape and prothorax, but suberect on the elytra; the hairs on the elytra arranged in 12 longitudinal rows; second to the last segment of antenna densely furnished with very thin appressed pubescence; ventral surface moderately punctured with curved recumbent pale yellow pubescence; the punctures rather deep except for abdominal sternites which are shallowly punctured; legs moderately covered with pale yellow pubescence.

Head nearly as long as wide, widest across eyes; labrum very short, transverse; clypeus produced in front, trapezoidal; frons oblique with sides carinate in reverse parenthesis shape as [) (]; gena short; antennal insertion distinctly elevated; vertex depressed in U-shape; eyes very large, coarsely faceted, deeply emarginate near the middle of lobes around antennal insertions, dilated around to ventral surface. Antennae long and slender, about 1.5 times as long as body length and the middle of seventh segment exceeding the elytral apex; scape as long as third, 5th the longest, 6th, 7th and 8th same in length, 5th to the last segments square pole shaped; relative lengths of segments as follows: 70 : 15 : 70 : 76 : 103 : 100 : 100 : 100 : 93 : 90 : 90.

Prothorax widest near base, 1.07 times as long as wide, almost parallel-sided in basal half, then slightly convergent apicad with weak constriction at some distance behind apex; disc lightly convex above with a transverse depression near base; apex marginate, 0.8 times as wide as basal width.

Prosternum lightly depressed transversely in front of coxal cavity; prosternal process narrow and lightly arcuate (or almost flat in the paratype), triangularly dilated apicad and overlapping epimera.

Mesonotum with undivided stridulatory files. Scutellum short lingulate with median longitudinal depression.

Elytra about 2.6 times as long as basal width, widest near base, nearly parallel-sided to basal three-fourths, then gently narrowed toward truncate apices; disc lightly swollen on both sides behind scutellum, provided with 12 rows of quadrate shaped deep setigerous punctures which become more or less shallower toward apex.

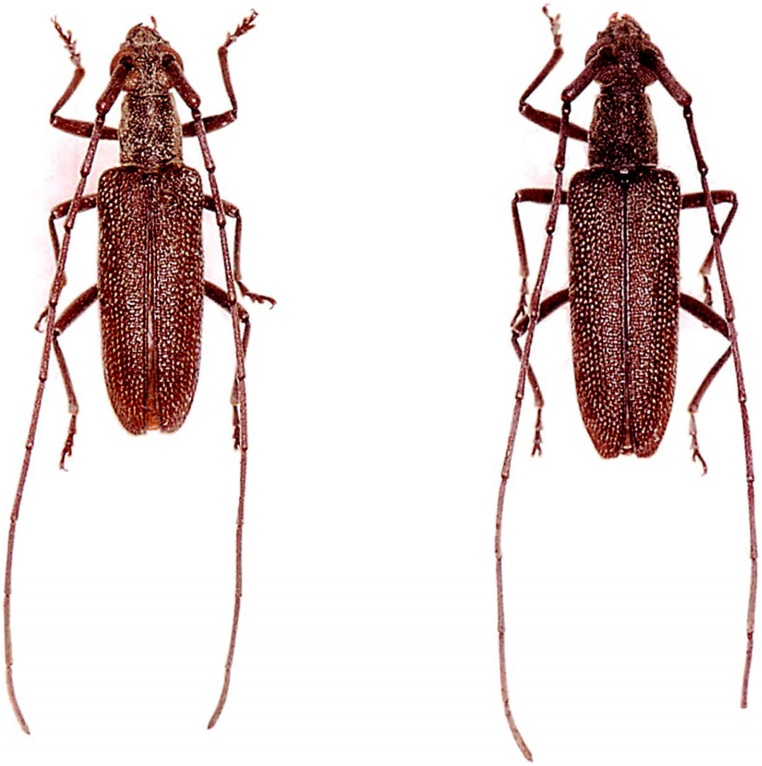

Fig. 1. Habitus of *Caraphia taiwana* sp. nov., holotype (left) and paratype (right).

Legs moderately long and slender; femora sublinear; tibiae slightly curved outward with very short tibial spurs; tarsi short with first segment as long as second and third combined; first, second and third tarsal segment dilated apicad, respectively; third tarsal segment deeply cleft.

Length from the tip of mandibles to the apices of elytra 12. 3 to 13.7 mm; width at humeri 3.3 to 3.6 mm.

Male genitalia (Fig. 2). Tegmen with lateral lobes straightly narrowed towards rounded apices, 4 times as long as basal width, sparsely provided with fine setae at the apices, apical third of dorsum and apical two-thirds of ventral surfaces; roof triangular, separated from the base of lateral lobe in dorsal view; ringed part straightly narrowed toward rounded base. Median lobe 5.0 times as long as wide, lightly narrowed apicad, with dorsal plate distinctly shorter than ventral plate in dorsal view, gently curved ventrad and thickened around middle in lateral view; median struts 0.3 times as long as total length of median lobe; crescent-like sclerites in endophallus large, hooked shape; extreme base of endophallus provided with peculiar appendage as illustrated.

Type series. Holotype: ♂, Urai, Taipei County, 1. VI. 1997, Wei-Tsao TSAI leg. Paratype: 1♂, Chien shih, Litungshan, alt. 1,500 m, Hsinchu Hsien, Taiwan, 14. VI. 1994 (at light trap), Liang-Chuen LEE leg.

Type depositories. The holotype is preserved in the collection of National Taiwan University, Taipei, Taiwan. A paratype is deposited in the private collection of the first author.

Distribution. Taiwan.

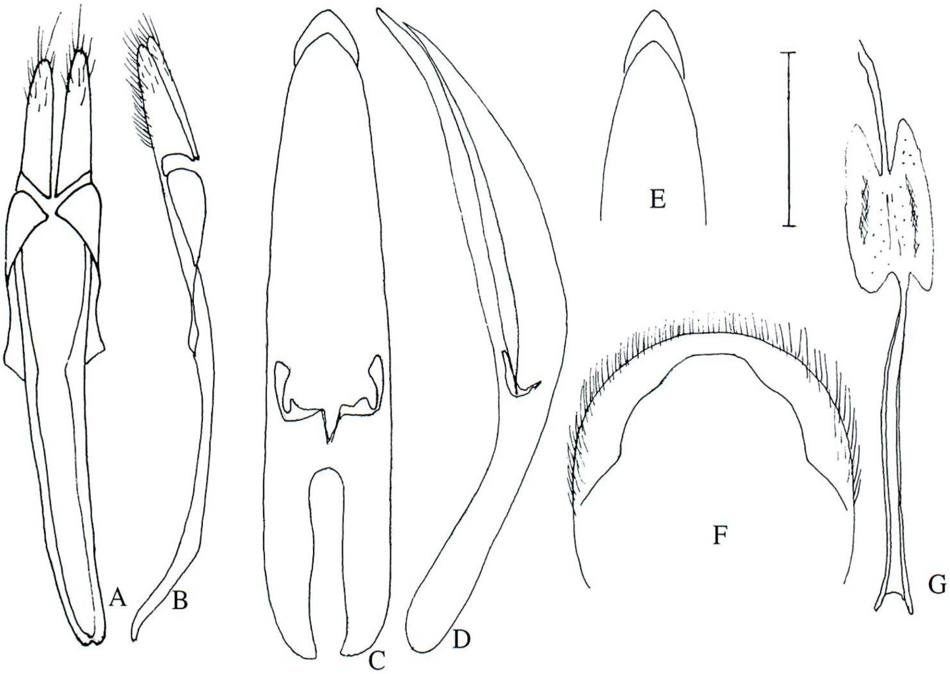

Fig. 2. Male genitalia of *Caraphia taiwana* sp. nov. —— A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view; G, basalmost structure of endophallus. Scale: 0.5 mm.

Notes. This new species is closest to *C. lepturoides* (MATSUSHITA, 1933), but it is easily distinguishable from the latter by distinctly longer antenna, and also the structure of male genitalia.

It is also similar to *C. thailandica* HAYASHI et VILLIERS, or *C. borneana* VIVES in coloration, but it differs from them in having larger body, longer antennae, coarsely arranged foveolate punctures on elytra, etc.

Discussion

As mentioned in the introduction, the taxonomic status of the genus *Caraphia* has been changed several times, but recent authors invariably placed it in the subfamily Lepturinae. The most important reason is that the hind wing venation shows typical structure of Lepturinae (HAYASHI, 1950; HAYASHI and VILLIERS, 1985). On the other hand, the stridulatory file of mesosternum is not divided as GAHAN (1906) already pointed out in his description of the genus *Caraphia*. Divided file of mesosternum is an important morphological characteristic in the subfamily Lepturinae and Spondylidinae and an undivided file is unusual in the Lepturinae.

Other features of the genus *Caraphia* discriminating it from other lepturine tribes are: body provided with scale-like hairs; fourth to the last antennal segment not cylindrical but like a square pole with distinct four carinae; male genitalia (Figs. 2–5) with base of lateral lobe obliquely slit and separated from triangular roof which is probably corresponding to basal piece in dorsal view.

N. OHBAYASHI (1982) transferred this genus to Lepturini for the reason of the paucity of relationship in external characteristics with Xylosteini except for coarsely faceted eyes, and also based on Petr ŠVÁCHA'S personal information on larval structures, which fully agree with the definition of the Lepturini except for the presence of urogomphi. According to recent personal communication of the second author with P. ŠVÁCHA, however, the result of his DNA analysis on the higher categories of Cerambycidae is rather complicated. He informed me as follows: "*Caraphia* is indeed a problem and of variable position in analyses. The only sequence we have is the Japanese species (*Caraphia leptuloides*), and this was one of the greatest headaches in Lepturinae (but in any case the genus DOES fall into that subfamily— the occasional jumps outside Lepturinae were obviously artifacts and largely disappeared as the number of available species increased). But within Lepturinae, the 16S sequence gives no clue where to place *Caraphia*. In any case it never occurred within (and usually even near) Lepturini, so my 'larval' guess that it might be a basal member of Lepturini was probably wrong."

As the result, the genus *Caraphia* should be placed neither in Lepturini nor in Xylosteini, and it is suggested to be a new tribe if it belongs to the subfamily Lepturinae. Further studies are needed to make the nomenclatural decision on the tribal affiliation.

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A Check List of the Species of the Genus *Caraphia*

Genus ***Caraphia*** GAHAN, 1906

Caraphia GAHAN, 1906, Fn. Brit. Ind. Coleopt. 1: 75 (type species: *Caraphia cribrata* GAHAN, 1906). — AURIVILLIUS, 1912, JUNK'S Coleopt. Cat., 52: 177. — BOPPE, 1921, Gen. Ins., 178: 18, 51. — GRESSITT & RONDON, 1970, Pacif. Ins. Mon., 24: 26, 30. — HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19-20): 23. — N. OHBAYASHI, 1992, Acta coleopt. japon., (2): 5. — JIANG & CHEN, 2001, Fn. sin., Insecta 21: 35, 235.

Neosalpinia MATSUSITA, 1933, J. Fac. Agric. Hokkaido imp. Univ., 34: 303 (type species: *Neosalpinia lepturoides* MATSUSITA, 1933). — MITONO, 1938, Nippon no Kôchû, (2): 50. — HAYASHI, 1950, Ent. Rev. Japan, 5: 60.

Caraphia (*Neosalpinia*): OHBAYASHI, 1963, Fragm. coleopt., (2): 8.

1. ***Caraphia cribrata*** GAHAN, 1906

Caraphia cribrata GAHAN, 1906, Fn. Brit. Ind. Coleopt. 1: 75, fig. 29 (type locality: Karen Mts., Burma). — AURIVILLIUS, 1912, Junk's Coleopt. Cat., 52: 177. — BOPPE, 1921, Gen. Ins., 178: 52. —

HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 25.
Caraphia (*Caraphia*) *cribrata*: OHBAYASHI, 1963, Fragm. coleopt., (2): 8.

Distribution: Burma (=Myanmar).

2. ***Caraphia minor*** GAHAN, 1906

Caraphia minor GAHAN, 1906, Fn. Brit. Ind. Coleopt. 1: 76 (type locality: Karen Mts., Burma). —— AURIVILLIUS, 1912: 177. —— BOPPE, 1921, Gen. Ins., 178: 52. —— HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 25.

Distribution: Burma (=Myanmar).

3. ***Caraphia laticeps*** (PIC, 1922)

Microrhabdium laticeps PIC, 1922, Mél. exot. Ent., 37: 10 (type locality: Yunnan-Fu, China).
Encyclops laticeps: GRESSITT, 1951, Longicornia, 2: 52.
Neosalpinia laticeps: VILLIERS & CHÛJÔ, 1970, Mem. Fac. Educ. Kagawa Univ., II, (192): 53.
Caraphia laticeps: HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 25.
Caraphia reductipennis PIC, in litt.: HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 24, pl. 3, fig. 7. (Yunnan, China)

Distribution: China [Yunnan].

4a. ***Caraphia lepturoides lepturoides*** (MATSUSHITA, 1933)

(Fig. 3)

Neosalpinia lepturoides MATSUSHITA, 1933, J. Fac. Agric. Hokkaido imp. Univ., 34: 301 (type locality: Okinawa). — MATSUSHITA, 1938, Ins. matsum., 12: 101. — MITONO, 1938, Nippon no Kôchû, 2: 49; —HAYASHI, 1950, Ent. Rev. Japan, 5: 62; 1960; ibid., 11: 22; 1961, ibid., 13: 37. —— SAMUELSON & GRESSITT, 1965, Pacific Ins., 7: 55.
Caraphia (*Neosalpinia*) *lepturoides*: OHBAYASHI, 1963, Fragm. coleopt., (2): 7.
Caraphia lepturoides: GRESSITT & RONDON, 1970, Pacif. Ins. Mon., 24: 32. —— MAKIHARA, 1982, Spec. Iss. Mem. Retir. Emer. Prof. M. CHÛJÔ, 128, fig. 3, 5 A–C. —— HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 26, text-fig. 1; pl. 3, fig. 6.
Caraphia lepturoides lepturoides: N. OHBAYASHI, 1992, Acta coleopt. japon., (2): 6, figs. 14–16.

Distribution: Japan [Honshu, Shikoku, Kyushu, Is. Yakushima, Is. Amami-ôshima, Is. Okinawa] .

4b. ***Caraphia lepturoides babai*** MAKIHARA, 1982

Caraphia babai MAKIHARA, 1982, Spec. Iss. Mem. Retir. Emer. Prof. M. CHÛJÔ, 127, figs. 3, 5-D (type locality: Ishigaki Is., Ryukyu). ——KUSAMA & TAKAKUWA, 1984, Longic. Beetl. Japan Col., 545, pl. 96, fig. 669. ——HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19-20): 26.
Caraphia lepturoides babai: N. OHBAYASHI, 1992, Acta coleopt. japon., (2): 5–6, figs. 11–13; 1992: 445.

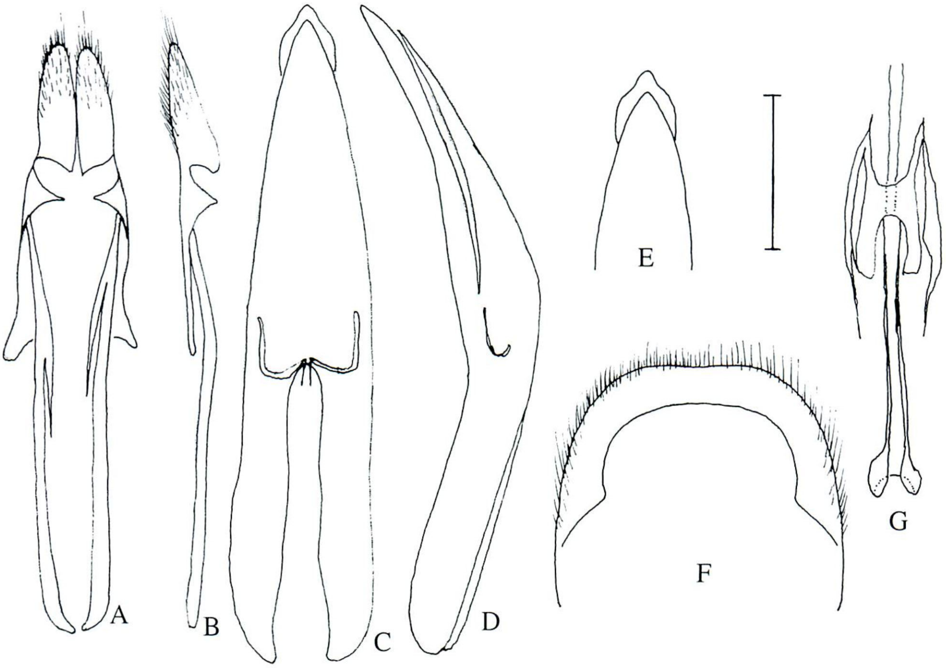

Fig. 3. Male genitalia of *Caraphia lepturoides* (MATSUSHITA, 1933) [Ashizuri, Kôchi Pref., Japan, 5. VI. 1982, K. SHIMIZU leg.] —— A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view; G, basalmost structure of endophallus. Scale: 0.5 mm.

Distribution: Japan [Ishigaki Is., Ryukyu].

5. ***Caraphia laosica*** GRESSITT et RONDON, 1970

Caraphia laosica GRESSITT et RONDON, 1970, Pacif. Ins. Mon., 24: 30, fig. 7D (type locality: Khongxedon, Wapikhamthong, Laos). ——JIANG & CHEN, 2001, Fn. sin., Insecta 21: 35, 235.

Distribution: Laos, China [Hainan Is.]

6. ***Caraphia granulifera*** HOLZSCHUH, 1984

Caraphia granulifera HOLZSCHUH, 1984: 141, fig. 1 (type locality: Central Nepal). ——HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 26.

Distribution: Nepal.

7. ***Caraphia thailandicia*** HAYASHI et VILLIERS, 1987

Caraphia thailandicia HAYASHI et VILLIERS, 1987, Bull. Osaka Jonan Women's Jr. Coll., (22): 2. (Type locality: Doi Pui, Chiang Mai, North Thailand.)

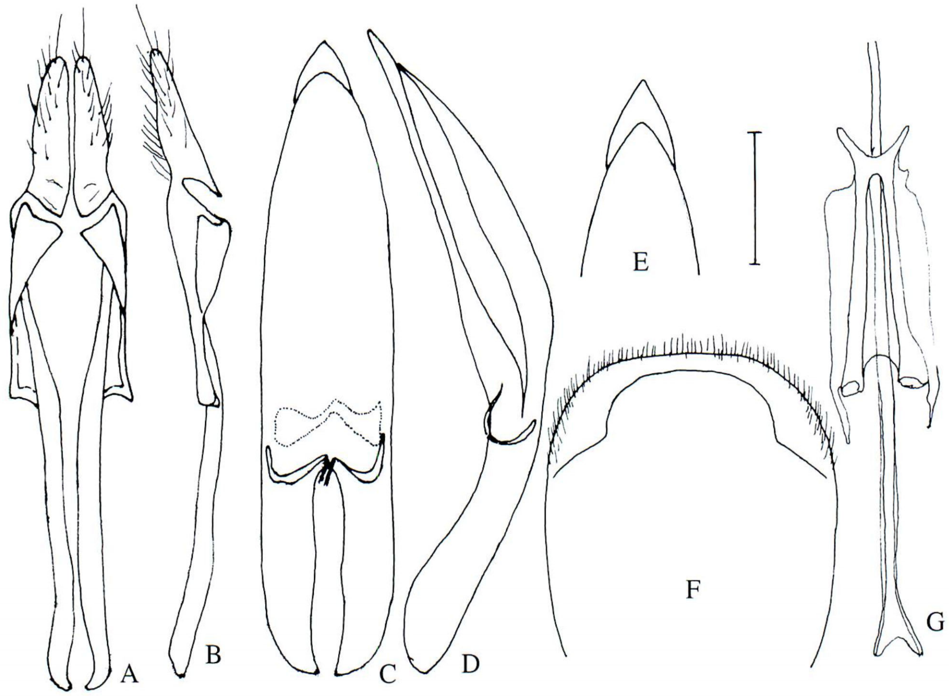

Fig. 4. Male genitalia of *Caraphia ebenina* HOLZSCHUH, 1989 [Tam Dao, North Vietnam, VI–VII, 1992, Native collector] —— A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view; G, basalmost structure of endophallus. Scale: 0.5 mm.

Distribution: North Thailand.

8. ***Caraphia ebenina*** HOLZSCHUH, 1989

(Fig. 4)

Caraphia ebenina HOLZSCHUH, 1989, Ent. Basil., 13: 361, figs. 1, 10 (type locality: Tam Dao, North Vietnam)

Distribution: North Vietnam.

9. ***Caraphia depressa*** HOLZSCHUH, 2003

Caraphia depressa HOLZSCHUH, 2003, Ent. Basil., 25: 147, fig. 1. (type locality: Tanah Rata, Cameron Highlands, Pahang, Malaysia)

Distribution: Malay Peninsula.

10. ***Caraphia borneana*** VIVES, 2005

(Fig. 5)

Caraphia borneana VIVES, 2005, Lambillionea, (105): 305. (type locality: Mt. Trus Madi, Sabah, Malaysia)

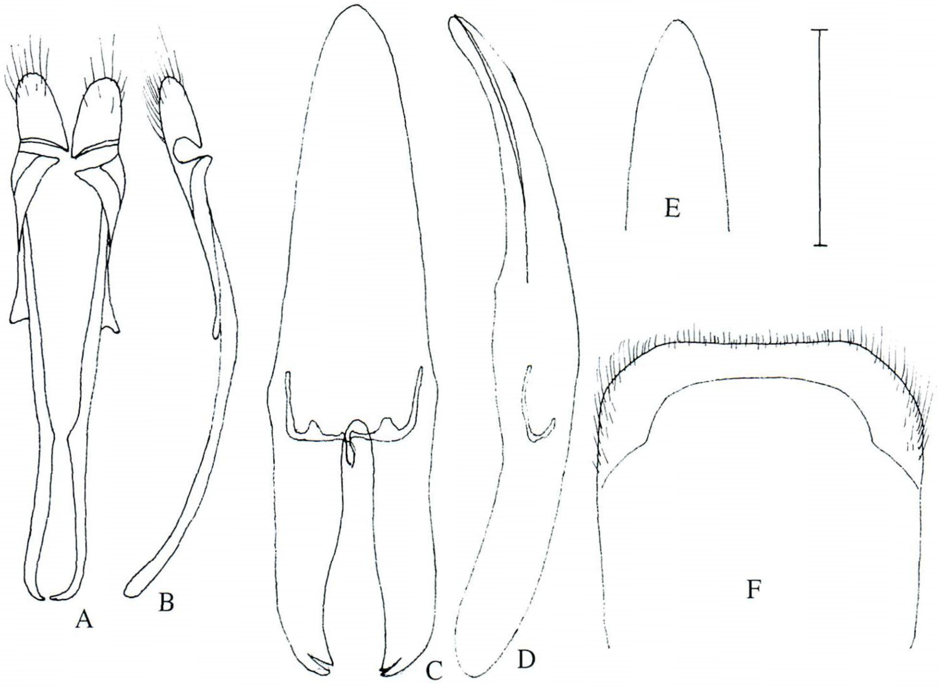

Fig. 5. Male genitalia of *Caraphia borneana* VIVES, 2005 [16 miles NW of Keningau, 22. IV. 1984, S. NAGAI leg.] — A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view. Scale: 0.5 mm.

Distribution: Borneo.

11. ***Caraphia taiwana*** CHOU et N. OHBAYASHI, sp. nov.

Caraphia taiwana CHOU et N. OHBAYASHI, 2008, (type locality: Urai, Taipei County, Taiwan)

Distribution: Taiwan.

要　約

周　文一・大林 延夫：台湾産ケブトハナカミキリ属の1新種と，その属の所属に関する考察．———台湾の烏来と新竹から得られた各1頭の雄の標本に基づいて，*Caraphia taiwana* sp. nov. を記載した．本種は日本のケブトハナカミキリに近縁であるが，その長い触角によって容易に区別出来る．また，既知種のチェックリストに加え，一部の種について雄交尾器を図示した．さらに，過去のケブトハナカミキリ属の所属の変遷を概観し，その分類学的位置について考察した．

References

AURIVILLIUS, Ch., 1912. Cerambycidae: Cerambycinae. *In* JUNK, W. and S. SCHENKLING (eds.), *Coleopterorum Catalogus*, (39): 1–574. W. Junk, Berlin.

BOPPE, P., 1921. Coleoptera Longicornia. Fam. Cerambycidae, Subfam. Disteniinae–Lepturinae. *In* WYTSMAN, P. (ed.), Genera Insectorum, (178), i+121 pp., 8 pls. Desmet-Verteneuil, Bruxelles.

GAHAN, C. J., 1906. The Fauna of British India including Ceylon and Burma. Coleoptera, vol. I, (Cerambycidae). Taylor and Francis ed. London, pp. 1–329.

GRESSITT, J. L., & J. A. RONDON, 1970. Cerambycidae of Laos. *Pacific Insect Monograph*, (24): 1–314.

HAYASHI, M. 1950. On the systematic position of *Neosalpinia lepturoides* MATSUSHITA (Col., Ceramb.). *The Entomological Review of Japan, Osaka*, **5**: 62–63. (In Japanese.)

HAYASHI, M., & VILLIERS, A., 1985. Revision of the Asian Lepturinae (Coleoptera: Cerambycidae) with special reference to the type specimens' inspection. Part, I. *Bulletin of Osaka Jonan Women's Junior Colledge*, (19–20): 1–75.

JIANG, S-N., & L. CHEN, 2001. Coleoptera, Cerambycidae, Lepturinae. *Fauna sinica, Insecta*, **21**: i–xiv + 1–296, pls. 1–18, 299 figs. Science Press, Beijing.

MATSUSHITA, M., 1933b. Beitrag zur Kenntnis der Cerambyciden des japanischen Reichs. *Jounal of the Faculty* of *Agriculture, Hokkaido Imperial University*, **34**: 157–445, pls. 1–5.

MATSUSHITA, M., 1938. Neue und wenig bekannte Bockkäfer aus Shikoku (I. Okubo's und M. Okamoto's Ausbeute). *Insecta Matsumurana*, **12**: 99–106.

OHBAYASHI, K., 1963. Systematic notes and description of new forms in Cerambycidae from Japan. *Fragmenta Coleopterologica, Kyoto*, (2–3): 7–12.

OHBAYASHI, N., 1992. Taxonomic notes on Japanese Cerambycidae (Coleoptera). *Acta Coleopterologica Japonica.*, (2): 1–11.

PIC, M., 1922. Nouveautés diverses. *Mélanges exotico-entomologique, Moulins* (37): 1–32.

SAITO, A., 1989. Female reproductive organ of Lepturinae cerambycid beetles from Japan, with references to their taxonomic significance (Part 1). *Elytra, Tokyo*, **17**: 65–86.

SAMUELSON & GRESSITT, 1965: 1965. The Cerambycidae (Coleoptera) of the Ryukyu Archipelago. *Pacific Insects*, **7**: 47–81.

TAMANUKI, K., [1943]. Family Cerambycidae, 2. Lepturinae. *In* OKADA, Y. *et al.* (eds.), *Fauna Nipponica*, **10** (8), 15: 8+259 pp, 226 figs.

VILLIERS, A., & M. CHÛJÔ, 1970. Coleoptera of the Loo-choo Archipelago (II) 36. Ceramycidae (2). *Memoirs of Faculty of Liberal Arts and Education, Kagawa University*, part II, (192): 53–56.

VIVES, E., 2005. Notes on Lepturinae (XI). Four new species of Lepturinae from South-east Asia. (Col. Cerambycidae). *Lambillionea*, **105**(2): 302–305.

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Pseudohesperus, a New Genus of Philonthina (Coleoptera: Staphylinidae) from East Asia, with Redescription of its Type Species *Philonthus rutiliventris* SHARP

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Abstract *Pseudohesperus* gen. nov. is established for the Asian staphylinine species *Ps. rutiliventris* (SHARP), comb. nov. and *Ps. eustilbus* (KRAATZ), comb. nov. that have hitherto been placed in the genus *Philonthus*. *Ps. rutiliventris is* designated as the type species of the new genus and is redescribed.

Japanese *Philonthus* having numerous punctures on the pronotum includes three known species, *viz*. *Philonthus rutiliventris* SHARP, *P. gastralis* SHARP and *P. daimio* SHARP. After close examination of these species, I concluded that they belong to different natural groups respectively. *P. daimio* is closely related to *P. lewisius* SHARP because of similar structures of male 9th sternite and male genitalia. *P. rutiliventris* and *P. gastralis* are similar in general appearance to each other and closely related to a *Bisnius* species in the structures of the protarsi but their mesosternum is not transversely carinate. Furthermore, *P. rutiliventris* and *P. gastralis* are distinctly different in structures of their genital segment. *P. gastralis* is similar in structures of the genital segments to those of the genus *Bisnius*, but it is not clear whether this species belongs to *Bisnius*.

Philonthus rutiliventris SHARP is common in Japan, but it has not been revised in detail. In observing this species in detail, I found several unique structures in protarsi, mesosternum, 9th abdominal sternite, chaetotaxy on pronotum, etc. Those structures are not found in known *Philonthus*, *Bisnius*, *Gabrius* and *Belonuchus* species. The male protarsi are slender and without modified hairs on the under side as in the above mentioned genera. Therefore *Philonthus rutilivenris* SHARP does not belong to the true *Philonthus*, but is more closely allied to *Bisnius* and its relatives, therefore I am going to establish a new genus, *Pseudohesperus* for this species.

Before going into further details, I wish to express my cordial thanks to Dr. Katsura MORIMOTO, Emeritus Professor of Kyushu University, for his critically reading this manuscript. I thank Mr. Shigehiko SHIYAKE, curator of Osaka Museum of Natural History, Osaka, for his kindly lending me the materials from the collection of Osaka Museum of Natural History, and Dr. Kiyoshi ANDO, Ehime University for his taking clear photographs of the specimens.

Pseudohesperus gen. nov.

Type species: *Philonthus rutiliventris* SHARP, 1874

Diagnosis. The present genus is closely allied to *Bisnius* and *Gabrius* because of the similar structure of protarsi, but it is easily distinguishable from the latters by the following characteristics: (1) mesosternum strongly convex medially in a subtriangular form, without transverse carina; (2) male 9th sternite with a pair of long appendages and without any long erect bristles; (3) female second gonocoxite very slender and long; (4) chaetotaxy on pronotum composed of only a pair of antero-lateral macrosetae, and basolateral ones absent; (5) gular gradually convergent posteriad to neck constriction and not parallel in posterior (basal) half.

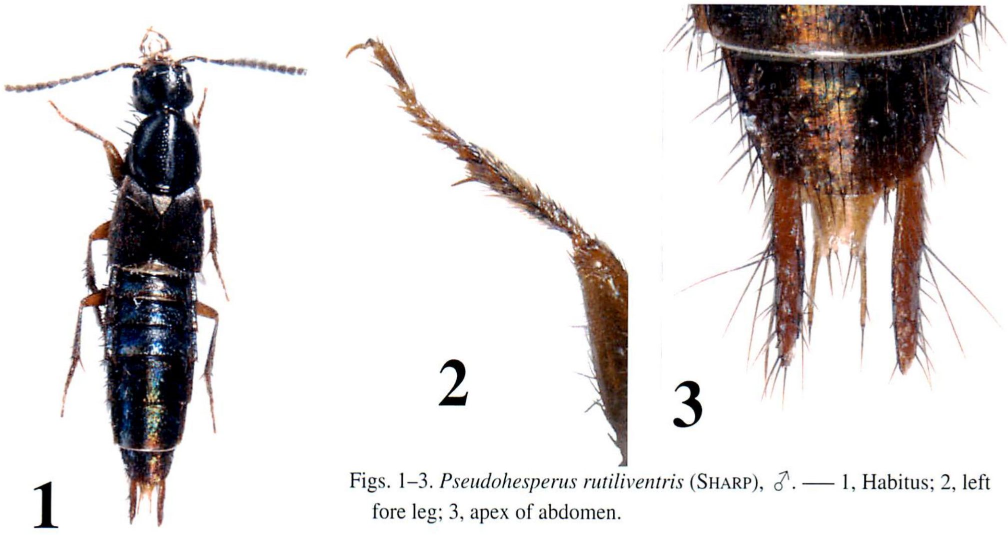
Description. Body medium in size, elongate, parallel-sided, well shining, with abdomen strongly iridescent.

Head subquadrate, a little transverse, a little narrower than pronotum and nearly parallel-sided, with posterior angles rounded; dorsum gently convex, coarsely and rather sparsely punctured in lateral sides, and widely impunctate in median area; chaetotaxy of macrosetae composed of 7 pairs as in the other genera of Staphylinini, well developed except front marginal and genal ones which are rather weakly so, occipital ones and postgenal ones placed on transversely same level, and other additional characteristic large setae indiscernible. Neck rather wide, entirely glabrous and impunctate dorsally. Eyes large, not prominent. Antennae slender, long, extending a little beyond elytral humeri and polished in basal 3 segments. Clypeal region weakly depressed subpentagonally.

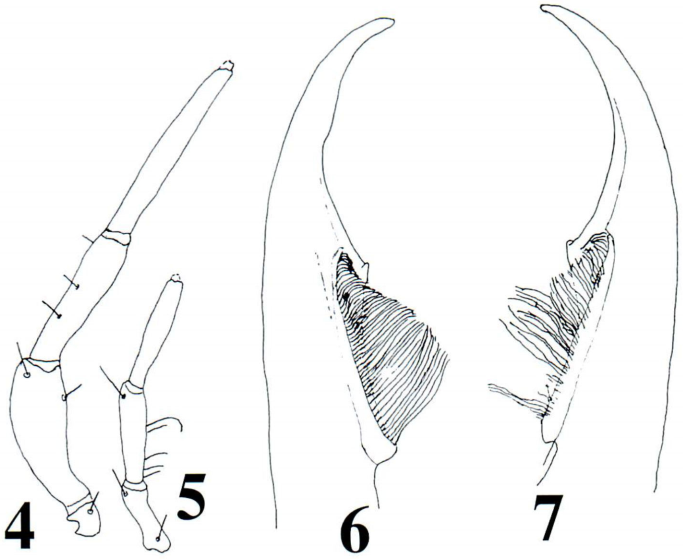
Labrum rather long, deeply bilobate, each lobe transversely convex in basomedian area, with several long setae of various length at front margin of the convexity. Mandibles nearly straight in basal 2/3, roundly curved in distal 1/3, a little longer than head, grooved laterally from base to apical 3/5, with one short and wide tooth and well developed prostheca on inner margin on ventral side. Maxilla and lacinia not appreciably different from those of *Philonthus.*

Maxillary palpi very long, nearly as long as mandibles, with all segments much longer than wide; 1st segment curved, the shortest, with a fine short seta at base and apex; 2nd gently curved, strongly thickened apicad, with several fine short setae here and there; 3rd straight, subcylindrical, thinned in basal 1/4, nearly as long as and slenderer than 2nd, with a few fine minute setae near apex; 4th straight, elongate-subfusiform, much slenderer and a little longer than 3rd, truncate at apex, without any setae. Labial palpi long and slender, nearly 2/3 as long as maxillary palpi, with all segments almost straight and much longer than wide; 1st segment nearly 2/3 as long as 2nd, with a fine short seta near base and apex; 2nd a little thickened apicad, nearly as long as 3rd, somewhat curved outward, with several setae of various length on inner margin and one seta near apex of lateral side; 3rd elongate-subfusiform, asetose, with a few very minute sensory hair at apex. Gular sutures widely separated at anterior most, gradually becoming closer posteriad in straight line to neck constriction.

Pronotum subquadrate, widely rounded posteriorly, widest behind middle, gently narrowed anteriad, slightly longer than wide; anterior margin nearly straight, anterior angles widely round-



Figs. 1–3. *Pseudohesperus rutiliventris* (SHARP), ♂. —— 1, Habitus; 2, left fore leg; 3, apex of abdomen.



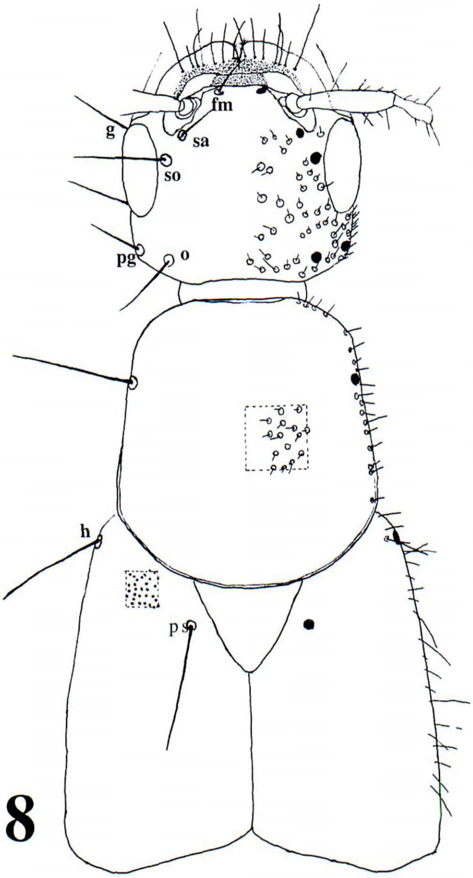
Figs. 4–7. *Pseudohesperus rutiliventris* (SHARP). —— 4, Right maxillary palpus; 5, right labial palpi; 6 and 7, mandibles, in ventral view.

ed; all margins finely bordered, visible in dorsal view except for anterior angles which are laid under weakly convex anterior corners; characteristic chaetotaxy composed of only one pair of macrosetae which are placed at anterior 1/4 of lateral margin and very close to the margin, and laterobasal macrosetae absent.

Scutellum triangular, finely and sparsely asperate-punctate, with prescutum well developed, long.

Elytra subquadrate, moderately long, weakly convex, rather closely asperate-punctate, with recumbent pubescence; chaetotaxy composed of two pairs of well developed macrosetae, namely, humeral macroseta at about top of humeral angle and very long parascutellar one, and in addition them some erect setae present.

Abdomen elongate, subparallel-sided, finely and rather sparsely punctured, the punctures on sternites a little larger and sparser than on tergites; basal three visible tergites (3rd to 5th) each



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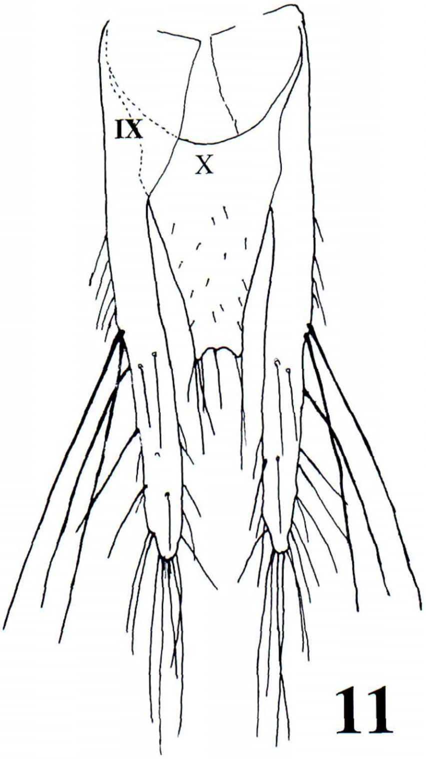

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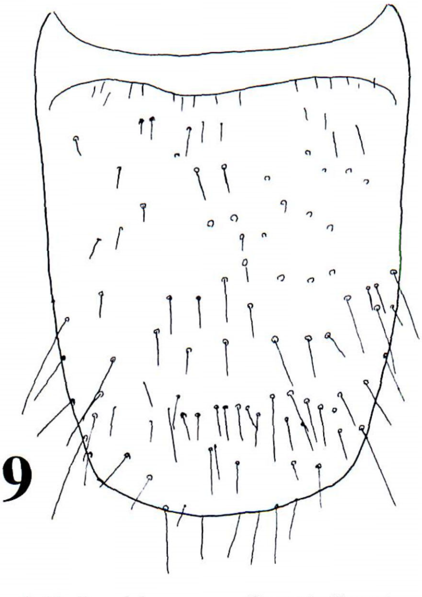

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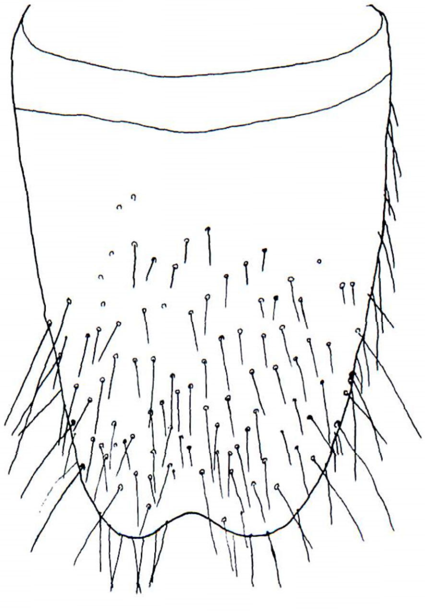


Figs. 8–11. *Pseudohesperus rutiliventris* (SHARP). —— 8, Chaetotaxy of macrosetae on fore body; (al=antero-lateral, fm=front-marginal, g=genal: h=humeral: io=infraorbital: o=occipital: pg=postgenal: ps=parascutellar: sa=supra-antennal: so=supraorbital); 9, male 8th tergite; 10, male 8th sternite; 11, male 9th and 10th tergite.

with two basal lines, weakly convex and minutely punctate between the lines; 7th tergite with whitish apical seam of palisade fringe; 8th tergite gently arcuate at hind margin in both sexes.

Male: 10th tergite elongate-subobtrapezoidal, weakly emarginate and bearing some long setae at apical margin; 9th tergite (stylus) slender, long, nearly twice as long as 10th tergite, weakly sinuate and gradually tapered apicad, rather sparsely pubescent and with about 7 long setae; 8th sternite narrowly emarginate in middle of apical margin; 9th sternite elongate-suboblong, weakly arcuate at sides, roundly emarginate at apex, without paired erect bristles but with a very long appendage at each lateral angle of the apical emargination, the appendages each bearing a long seta at the base and the apex.

Female: 10th tergite elongate-obtrapezoidal, rounded at apex, with 3 pairs of long setae near apex; 9th tergite (stylus) similarly shaped as in male but relatively shorter and thicker, rather sparsely pubescent, with several setae; gonocoxite slender and long, second gonocoxite elongate, subcylindrical, with a long bristle near base and a pair of long setae at apex, and minute stylus rather long in Philonthina, with a pair of long setae at apex.

Legs moderately long; tibiae bearing several short but stout spines; tarsal formula 5–5–5, tarsal segments glabrous dorsally, with sparse long setae or pubescence at margins; protarsi slender, without modified hairs on under side; 1st metatarsomeres nearly as long as 5th; procoxae without spines, sparsely scattered with long pubescence and a few fine long setaceous pubescence on lateral sides; empodial setae absent.

Male genitalia elongate and symmetrical; penis gradually narrowed apicad and gently curved ventrad in lateral view; parameres unilobed, rounded at apex, bearing numerous peg-setae on inner face of apical portion, with several fine setae at its margin.

Etymology. The new generic name is a combination of Pseudo- = false + *Hesperus* = a known generic name, derived from Greek, and gender is masculine.

Notes. The present genus includes only two species, *Philonthus rutliventris* SHARP and *P. eustetilbus* CAMERON at present, but according to Mr. T. ITO, my research fellow, (pers. comm.), some unknown species belonging *Pseudohesperus* gen. nov. are present in Southeastern Asia.

Pseudohesperus rutiliventris (SHARP), comb. nov.

(Figs. 1–18)

Philonthus rutiliventris SHARP, 1874. Trans. Ent. Soc. London, 1974: 47 (Type locality: Nagasaki, Japan; Lake Baikal, Eastern Shiberia; China). —— MATSUMURA, 1911: 114. —— BERNHAUER and SCHUBERT, 1914: 354. —— SCHEEPELTZ, 1933: 1359. —— ADACHI, 1937: 56. —— ADACHI, 1952, 18. —— NAKANE, 1963: 91. —— WATANABE and SHIBATA, 1972; 64. —— SHIBATA, 1983: 117. —— YUH, PAIK, KWON and LEE, 1985: 242. —— J. LI, 1993: 35. —— HERMAN, 2001: 2949. —— LÖBL and SMETANA, 2004: 649.

Hesperus tokyanus DVOŘÁK, 1957: 9 (Type locality: Mt. Takao, Tokyo, Japan). — SHIBATA, 1983: 139. — HERMAN, 2001: 2693. — LÖBL and SMETANA, 2004: 638. Syn. nov.

Colour black; mouth organs reddish brown; antennae narrowly reddish at apex of basal 2 segments; elytra blackish brown but narrowly pale along suture and apical margin, with pale brownish pubescence; abdomen strongly iridescent, with tergites narrowly brownish at each apical margin, apical margins of 3rd to 6th sternite rather widely and whole of 7th and 8th reddish brown; legs pale yellow, with tibiae darkened. Length: 8.0–9.5 mm.

Head subquadrate, subparallel-sided, obtusely rounded at basal angles and nearly straight at basal margin, wider than long (7 : 5), shorter and narrower than pronotum (5 : 6 and 5 : 6.6), gently convex above, widely glabrous medially, coarsely and numerously (not densely) punctured around eyes and in postgenae, the punctures larger around median space than in orbital periphery, and microsculpture composed of very obsolete transverse striae, which are often broken; front clypeal region very minutely and sparsely punctured. Eyes large, not convex, and the longitudinal diameter a little longer than postgena. Antennae long, extending a little beyond the middle of pronotum, all the segments distinctly longer than wide, 11th segment subelliptical, and each segment with the following relative length from base to apex:

Pronotum subquadrate, weakly dilated posteriad, nearly straight at anterior margin and sides, widely rounded at anterior angles and largely rounded off posteriorly, a little wider than long (4 : 3), a little narrower and shorter than elytra (8 : 11 and 5 : 7); disc rather strongly convex, coarsely and densely punctured except for median line, which is rather wide, glabrous, the punctures almost same in size, and microsculpture very obsolete as well as on head.

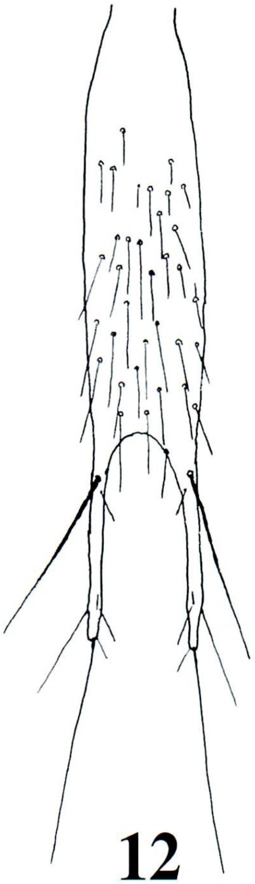
Scutellum flattened, sparsely asperate-punctate, with transversely striate faint microsculpture.

Elytra subtrapezoidal, a little wider than long (8 : 7), a little dilated posteriad, nearly straight at sides, widely and weakly emarginate at apical margin, slightly emarginate and oblique in each lateral fourth of the margin, obtusely angular at latero-apical angles and narrowly rounded at sutural angles; disk rather flattened, finely and densely asperate-punctate, without microsculpture.

Abdomen very sparsely punctured on basal 3 visible tergites, the punctures much more sparse on each posterior half, on the following tergites the punctures smaller and rather dense in each basal half; sternites rather densely and coarsely punctured in each basal half, very sparsely so in posterior half. In male, 8th tergite largely arcuate posteriorly; 9th (stylus) elongate, each with a pair of very long bristles at the middle of lateral side, and 10th elongate-obtrapezoidal, weakly emarginate at apical margin, bearing a few fine setae there; 8th sternite narrowly emarginate at posterior margin, narrowly and triangularly glabrous before the emargination; 9th sternite elongate-suboblong, very weakly arcuate at sides, roundly emarginate at apical margin, with a very long, slender and straight appendage at each lateral angle of the emargination, and the appendage 0.64 times as long as this sternite, bearing a very long, stout seta near the base, with a long seta at the tip. In female 9th tergite (stylus) elongate, densely setose, bearing a pair of long setae at the middle of lateral side, one seta at apical fourth of upper side, a pair of long ones at the tip, and several long ones here and there; 10th subtriangular, rounded at apex, with a pair of long setae in the middle of apical margin; 8th sternite gently rounded at apical margin; gonocoxite elongate, slender, bearing a pair of long setae at the middle of lateral side, and minute stylus rather long, with a pair of long setae at the tip.

Legs moderate in length and thickness; tibiae bearing several stout spines; protarsi comparatively wider in male than in female; 1st segment of hind tarsi slightly shorter than the following 3 segment combined together but a little longer than 5th.

Male genitalia symmetrical; penis elongate, gradually narrowed apicad and rounded at apex in ventral view, gently curved and narrowed apically in lateral view, and almost membranous in full length of dorsum; parameres unilobed, elongate, somewhat spatulate and gently emarginate in middle of sides in ventral view, rounded at apex, which reach near apex of penis, and inner face bearing numerous (not dense) peg-setae in apical third, with several fine setae of various length at apical marginal area.



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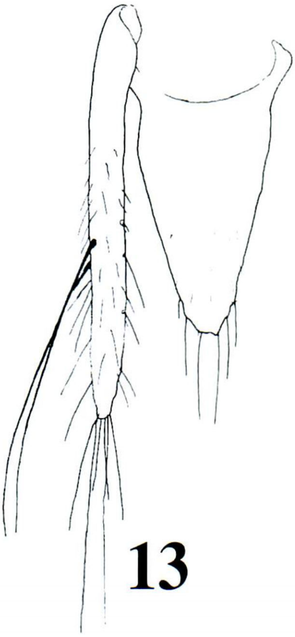

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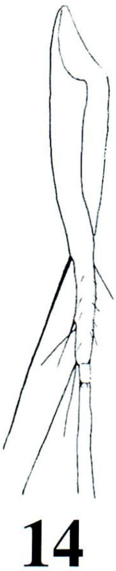

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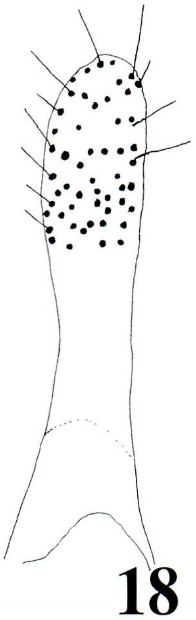

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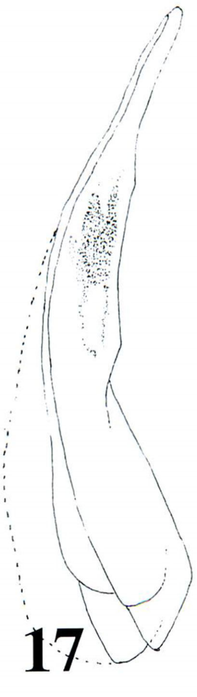
Figs. 12–18. *Pseudohesperus rutiliventris* (SHARP). —— 12, Male 9th sternite; 13, female 9th and 10th tergite; 14, gonocoxite. Figs. 15–18, male genitalia: 15, ventral view; 16, lateral view; 17, penis, lateral view; 18, paramere, inner face with peg-setae.



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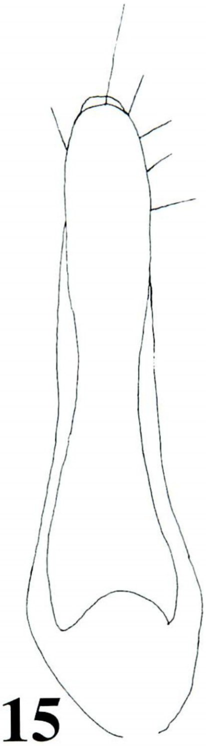

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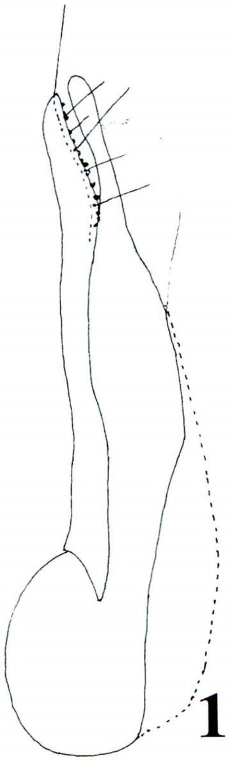

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Specimens examined: 1♂, Mizuho-cho, Kyoto, 17. IV. 1983, Y. HAYASHI leg.; 1♂, 2♀♀, Mt. Amaishiyama, Sasayama-cho, Hyogo, 11. VIII. 1980, Y. HAYASHI leg.; 2♂♂, 1♀, Mt. Noda, Kanazawa-shi, Ishikawa, 24. X. 1962, Y. HAYASHI leg.; ♂, Oguro, Ina-shi, Nagano, 27. VIII. 1961, Y. HAYASHI leg.; 1♀, Minamizawa, Ina-shi, Nagano, 1. VIII. 1956, Y. HAYASHI leg.; 1♀, Hidakatsu, Is. Tsushima, 29. VII. 1967, S. NISHINA leg.; Sasuna, Is. Tsushima, 30. VII. 1967, S. NISHINA leg.; 1♀, Mt. Nose, Osaka, 11. VI. 1967, S. NISHINA leg.; 1♀, Takedao, Takarazuka-shi, Hyôgo, 18. IV. 1959, T. KAWATSU leg.; 1♂, Takizawa-mura, Iwate, 7. VIII. 1970, J. KAMEI leg.; 1♂, Sansen-Gôryûten, Riv. Yodogawa, Kyoto, 14. X. 1970, M. GOTO leg.; 1♂ ,1♀, Mt. Myoken, Toyono-cho, Osaka, 4. VI. 2000, Y. KAWAKAMI leg.; 1♀, Sapporo, Hokkaido, 15. V. 1938, H. AOKI leg.; 1♀, Hatakeda-Shimomaki, Kanmaki-cho, Nara, 5. IV. 1975, K. HARUSAWA leg.; 1♀, Nara, 4. V. 1930, N. TOZAWA leg.

Distribution. Japan; Russia, China, S. Korea.

Pseudohesperus eustilbus (KRAATZ), com. nov.

Philonthus eustilbus KRAATZ, 1859: 98 (Type locality: Ceylon). —— BERNHAUER and SCHUBERT, 1914: 337. —— CAMERON, 1932: 150. —— SCHEERPELTZ, 1933: 1341. —— CAMERON, 1933: 387. —— SCHEERPELTZ, 1954: 114. —— COIFFAIT, 1982: 232. —— HERMAN, 2001: 2819. —— LÖBL and SMETANA, 2004: 644. —— HAYASHI, 2005: 68.

Philonthus versicolor CAMERON, 1919: 254 (Type locality: Ceylon).—— CAMERON, 1932: 150 (synonym of *eustilbus*). —— SCHEERPELTZ, 1933: 1341 (synonym of *eustilbus*).

Specimens examined: 1♀, Nanshanchi, Taiwan, 22. IX. 1970, Y. KIYOYAMA leg.; 1♀, Ditto, Taiwan, 5. III. 1970, T. KOBAYASHI leg.; 1♀, Fungchiifo, Taiwan, 17. VIII. 1969, Y. MAEDA leg.; 1♂, Mt. Yangming, Taiwan, 30. IV. 1982, T. ITO leg.

Distribution. Widely distributed in Oriental region from Sri Lanka to Taiwan.

Notes. The present species easily separated from *P. rutiliventris* in having very sparsely punctured pronotum and different shape of male genitalia.

要　約

林 靖彦：コガシラハネカクシ亜族の1新属及びその模式種の再記載.——— ムネスジコガシラハネカクシ *Philonthus rutiliventris* はごく普通に見られる種だが，その形態について詳しく再検討されたことはないようである．筆者は外部形態について詳しく調べた結果，*Philonthus* 属（コガシラハネカクシ属）とは異なり，前付節の構造などから *Bisnius* 属（和名なし）に近縁の種であることが判明した．さらに，中胸腹板，腹部生殖節の構造から *Bisnius* 属とも異なることが明らかとなったので新属, *Pseudohesperus* を立て，所属を移した．

References

ADACHI, T., 1937. The staphylinid fauna of Izu-Oshima, I. *Nippon-no-Kochu*, **I**: 52–60.

ADACHI, T., 1957. The staphylinid fauna of Japan. *Journal of the Toyo University*, **11**: 1–35.

BERNHAUER, M. And SCHUBERT, 1914. Staphylinidae IV. *In*: S. SCHENKLING (Ed), *Coleopterorum Catalo-*

gus, **5** (57): 289–408. Berlin: Junk.

CAMERON, M., 1919. New species of Staphylinidae from Ceylon, Part I. *Entomologists monthly Magazine*, **55**: 224–228, 251–255.

CAMERON, M., 1932. Coleoptera, Staphylinidae, Vol. 3: xiii+1–443, *In*: *The fauna of British India including Ceylon and Burma, London*: Taylor and Francis.

CAMERON, M.,1933. Staphylinidae (Col.) from Mt. Kinabalu. *Journal of the Federated Malay States Museum*, **17** (2): 338–360.

COIFFAIT, H., 1974. Coléopteres Staphylinides de la région Paléarctique occidentale II. Sous famille Staphylininae, Tribus Philonthini et Staphylinini. *Nouvelle Revue d'Entomologie, Supplément* **4** (4): 1–593.

COIFFAIT, H., 1982. Staphylinides (Col.) de la région himalayenne et de l'Inde (I. Xantholininae, Staphylininae et Paederinae). *Entomologica Basiliensia*, **7**: 231–302.

DVOŘÁK, R., 1957. Troisiéme contribution á la connaissance des Staphylinidae (Col.) japonais. *Bulletin de la Société Entomologique de Mulhouse*, **1957**: 9–10.

HAYASHI, Y., 1994. Studies on the Asian Staphylininae II. (Coleoptera, Staphylinidae). On the characteristics of the genus *Philonthus* CURTIS, sensu stricto, with a redescription of *Philonthus splendens* (FABRICIUS). *Elytra, Tokyo*, **22** (1): 115–131.

HAYASHI, Y., 2005. New records of Staphylinidae from Taiwan, 4. *The Entomological Review of Japan*, **60** : 68.

HERMAN, L., 2001. The Catalog of Staphylinidae, V, Staphylininine group. *Bulletine of the American Museum of Natural History*, **265**: 2441–3020.

KRAATZ, G., 1859. Die Staphyliniden-Fauna von Ostindien, insbesondere der Insel Ceylon. *Archiv für Naturgeschichte*, **25** (1): 1–196.

LI, J.-K., 1993. The rove beetles of Northeast China: 1–63, 151–163. *In*: LI and CHEN; Studies on fauna and ecogeography of soil animal (sic). Changchun, Jilin Province, Northeast Normal University Press. 256 pp. (In Chinese).

MATSUMURA, S., 1911. Erster Beitrag zur Insekten-Fauna von Sachalin. *The Journal of College of Agriculture, Tohoku Imperial University, Sapporo*, **4**: 1–144.

NAKANE, T., 1963. Staphylinidae. *In*: T. NAKANE, K. OHBAYASHI, S. NOMURA and K. KUROSAWA: Iconographia Insectorum Japonicorum, Colore naturali edita, 2: 81–100. Tokyo: Hokuryukan. (In Japanese)

SMETANA, A., 2004: pp. 237–698. *In* I. LÖBL and A. SMETANA (ed.), Catalogue of Palaearctic Coleoptera, Vol. 2. Stenstrupe: Apollo Books, 942 pp.

SCHEERPELTZ, O., 1933. Staphylinidae VII. *In*: SCHENKLING (ed.), *Coleopterorum Catalogus*. **6** (129): 968–1500, Berlin: Junk.

SCHEERPELTZ, O., 1954. Die von Herrn Konsul Gg. FREY wärend seiner Studienreise nach Ostindien und Ceylon aufgesammelten Staphyliniden (Coleoptera). *Entomologischen Arbeiten aus dem Museum G. Frey*, **5**: 109–115.

SHARP, D., 1874. The Staphylinidae of Japan. *Transactions of the Entomological Society of London*, **1874**: 1–103.

SHIBATA, Y., 1983. Provisional check list of the family Staphylinidae of Japan, III. *Annual Bulletin Nichidai Sanko*, No.211: 60–149, (Insect, Coleoptera). *Annual Bulletin of Nichidai Sanko*, (22): 79–141.

WATANABE, Y. And Y. SHIBATA, 1972. The staphylinid-fauna of Yakushima Island, Japan, with descriptions of a new genus and new species. *Journal of Agricultural Science of the Tokyo University of Agriculture* **17**(1): 599–72.

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Ent. Rev. Japan, **63** (2): 155–169, December 25, 2008

New Species of the Genus *Onthophagus* (Coleoptera: Scarabaeidae) from Thailand, Part 4

Descriptions of Five New Species, Revival of a Suppressed Specific Name and Seven New Distributional Records

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Abstract Five new species, revival of a suppressed specific name and seven new distributional records of the genus *Onthophagus* from various areas of Thailand are dealt with. The new species are described under the following names: *Onthophagus* (*Onthophagus*) *pimpasaleei* sp. nov., *O.* (*O.*) *mordindangus* sp. nov., *O.* (*O.*) *samoengus* sp. nov., *O.* (*Serrophorus*) *chulapornus* sp. nov. and *O.* (*S.*) *thailaevis* sp. nov. The revival of a suppressed specific name is *Onthophagus* (*Furconthophagus*) *boucomonti* PAULIAN, 1931, with its redescription. New records from Thailand are *O.* (*Onthophagus*) *rorarius* HAROLD, 1877, *Onthophagus* (*Parascatonomus*) *muticifrons* ENDRÖDI, 1973, *O.* (*Onthophagiellus*) *kawaharai* OCHI et KON, 2007, *O.* (*O.*) *hidakai* OCHI et KON, 1995, *O.* (*Paraphanaeomorphus*) *semipiceus* KABAKOV, 1998, *O.* (*P.*) *strnadi* KABAKOV, 1998, and *O.* (*Gibbonthophagus*) *kiyoshii* OCHI et KON, 2007.

This paper is the fourth part of the study on the genus *Onthophagus* from Thailand. The present authors will describe five new species and also report records of seven species new to the fauna of Thailand. They will also revive a suppressed specific name and redescribe the species from Thailand.

Before going further in details, the authors express their gratitude to the TRF/BIOTEC Special Programme for Bio-diversity Research and Training Grant of Thailand: BRT 142012 for their financial support, and to Dr. Hans BÄNZIGER, Chiang Mai University, who offered materials from his ecological studies in North and South Thailand. The authors thank Dr. Paul SCHOOLMEESTERS, for supplying invaluable old references. They also thank Dr. Makoto KIUCHI, Tsukuba City, for taking very clear photographs of the type specimens inserted in this paper.

Depositories of the holotypes of the new species to be designated are given in the text with the following abbreviations: NSMT (=National Museum of Nature and Science, Tokyo, Japan), EMKKU (=Entomology Department Museum, Faculty of Agriculture, National Khon Kaen University, Khon Kaen, Thailand), EACU (=Entomology Department Museum, Faculty of Agriculture, Chiang Mai University, Chiang Mai, Thailand).

Descriptions of New Species

Onthophagus (*Onthophagus*) *pimpasaleei* sp. nov.

(Figs. 1, 7–8)

Body ovate, rather strongly convex, with elytra gently depressed, weakly concave longitudinally in middle; black with feeble brownish tinge, posterior part of head, pronotum and elytra almost black, antennal clubs yellowish, mouth parts, ventral side of head and tarsi dark reddish brown, bristles on surfaces brownish black; dorsal surface weakly, rather sericeously shining, legs and metasternal shield moderately shining, abdomen very weakly shining; dorsal surface rather densely covered with fine suberect hairs, ventral surface finely haired.

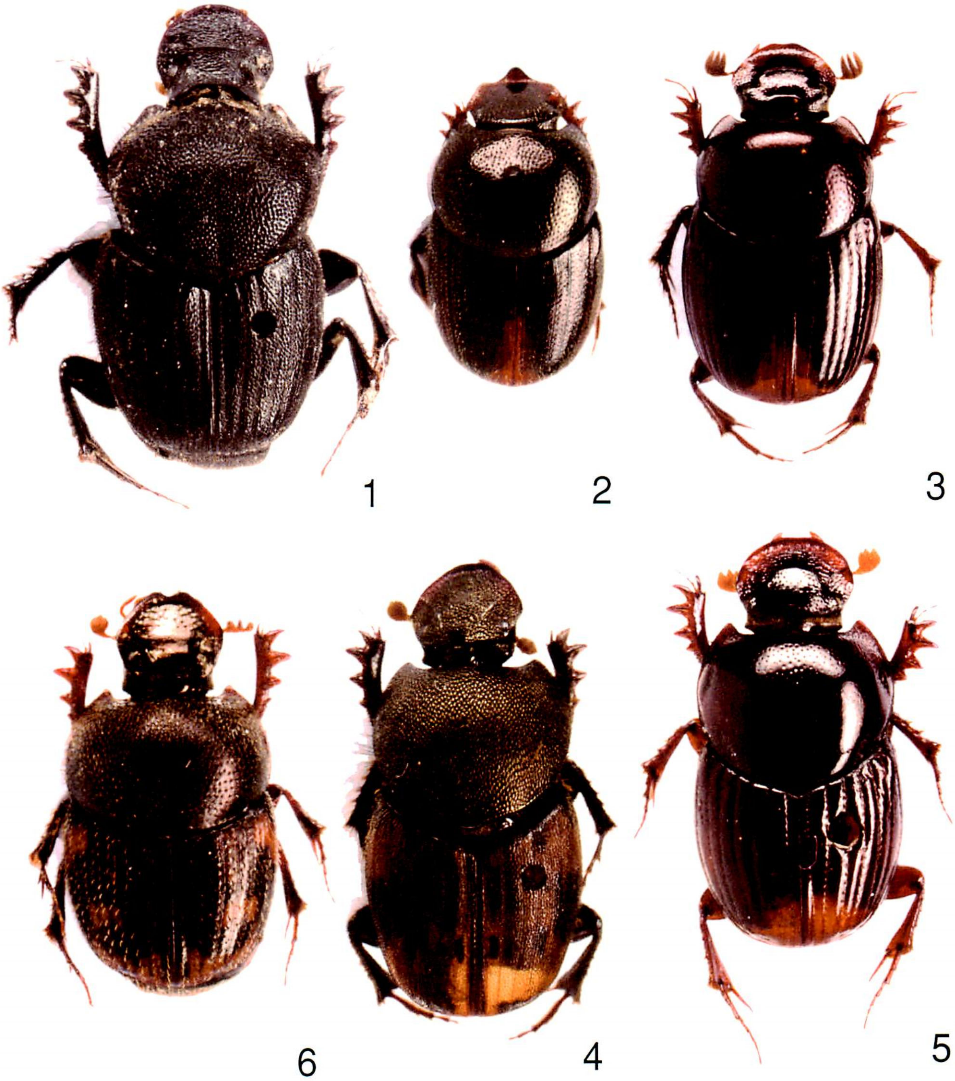
Male. Head semicircular, rather flat, gently inclined anteriad, feebly covered with isodiametric microsculpture; clypeus broad, transversely ruguloso-punctate, with apex produced, rather noticeably reflexed and slightly truncate in front; fronto-clypeal border ridged, the ridge feebly curved anteriad; genae (ocular lobes) subrhombical, weakly produced laterad, coarsely ruguloso-punctate, depressed in areas along eyes; frons subtrapezoidal, gently raised posteriad, transversely ruguloso-punctate; posterior margin of head produced backwards as a broad lamina, the outer angles of lamina forming a pair of gently inclined slightly posteriad horns, the sides of horns being subparallel and interior areas being widely emarginate. Eyes subcrescent-shaped, with posterior parts reaching outer margins.

Pronotum wider than long (5 : 4), widest at anterior 2/5; apex produced in middle, noticeably sinuous on each side, wholly rimmed; front angles produced anteriad, feebly truncate at apices, hind angles obtuse; base roundly produced, finely bordered; sides steeply declined to lateral margins (more steeply so anteriad), which are wholly finely rimmed, and slightly sinuous before hind angles; disc rather strongly elevated, slightly flattened in posterior part, covered with isodiametric microsculpture, closely scattered with somewhat ovoid punctures, which are often fused one another, and bear recumbent bristles; areas before hind angles abruptly inclined, finely punctate, and furnished with long suberect hairs in antero-interior parts.

Elytra shallowly punctato-striate, the punctures in striae slightly notching intervals; intervals weakly convex and feebly wrinkled, noticeably covered with isodiametric microsculpture, rather closely scattered with small punctures, each puncture with a small granule on anterior edge and also with a recumbent bristle, thus, the intervals seem somewhat coriaceous.

Pygidium weakly convex in middle, covered with isodiametric microsculpture, rather closely punctate, each puncture with a recumbent bristle. Aedeagus rather short. Phallobase distinctly curved near apex, about 1.2 mm in length, 0.6 mm in apical width. Parameres elongate and almost simply formed, without lateral or ventral tooth on each side, about 1.0 mm in length; each with seemingly thin half-membraneous rounded lobe at apex, whose border is defined by a fringe of short hairs.

Legs rather stout in shape in members of *Onthophagus*; protibiae with four outer teeth,



Figs. 1–6. *Onthophagus* spp. in dorsal view: —1, *Onthophagus* (*Onthophagus*) *pimpasaleei* sp. nov., holotype, male; 2. *O.* (*O.*) *mordindangus* sp. nov., holotype, male; 3, *O.* (*O.*) *samoengus* sp. nov., holotype, male; 4, *O.* (*Serrophorus*) *chulapornus* sp. nov., holotype, male; 5, *O.* (*S.*) *thailaevis* sp. nov., holotype, male; 6, *O.* (*Furconthophagus*) *boucomonti* PAULIAN, male.

with acute terminal spur; ratios of the lengths of spur of metatibia and metatarsal segments: 1.25; 1.32, 0.36, 0.24, 0.20, 0.46.

Female. Ridge on fronto-clypeal border stronger, feebly produced anteriad; frons with a strong substraight ridge near posterior border; pronotum with a substraight ridge along upper edge of anterior declivity.

Body length: 7.3–9.4 mm.

Type Series. Holotype: ♂, Phukieo Wildlife sanctuary, Chiayaphum Prov., NE. Thailand, Pig dung, Pine tree forest, 6. VIII. 1988, S. PIMPASALEE leg. (EMKKU). Paratypes: 1 ♂, Chulaporn Dam, Chiayaphum Prov., F4 / 10 Diurnal, 31. I. 2008, Y. HANBOONSONG leg.; 1 ♀., "De / nn / 28. 5. 00".

Notes. The present new species rather resembles *Onthophagus* (*Onthophagus*) *rugicollis* HAROLD, 1880 from Sumatra, but can be easily distinguished from the latter by the pronotum very densely and strongly punctate, the punctures broadly duplicate in front (the pronotum fairly densely and strongly punctate, the punctures narrowly duplicate in front in *O. rugicollis*), the head in male with a pair of horns in the posterior portion, which are independent and the interspace simply formed (the head with a pair of well developed horns in the posterior portion, which are connected by a developed lamina in *O. rugicollis*), the head in female with a vertexal transverse ridge only pointed at the middle of the summit (with three sharp points on the summit in *O. rugicollis*), and the pronotum in female with a transverse ridge in front (the pronotum with a pair of well-separated tubercles in front in *O. rugicollis*).

The specific name is given in honor of Mr. S. PIMPASALEE, the collector of the holotype of this new species.

Onthophagus (***Onthophagus***) ***mordindangus*** sp. nov.

(Figs. 2, 9–10)

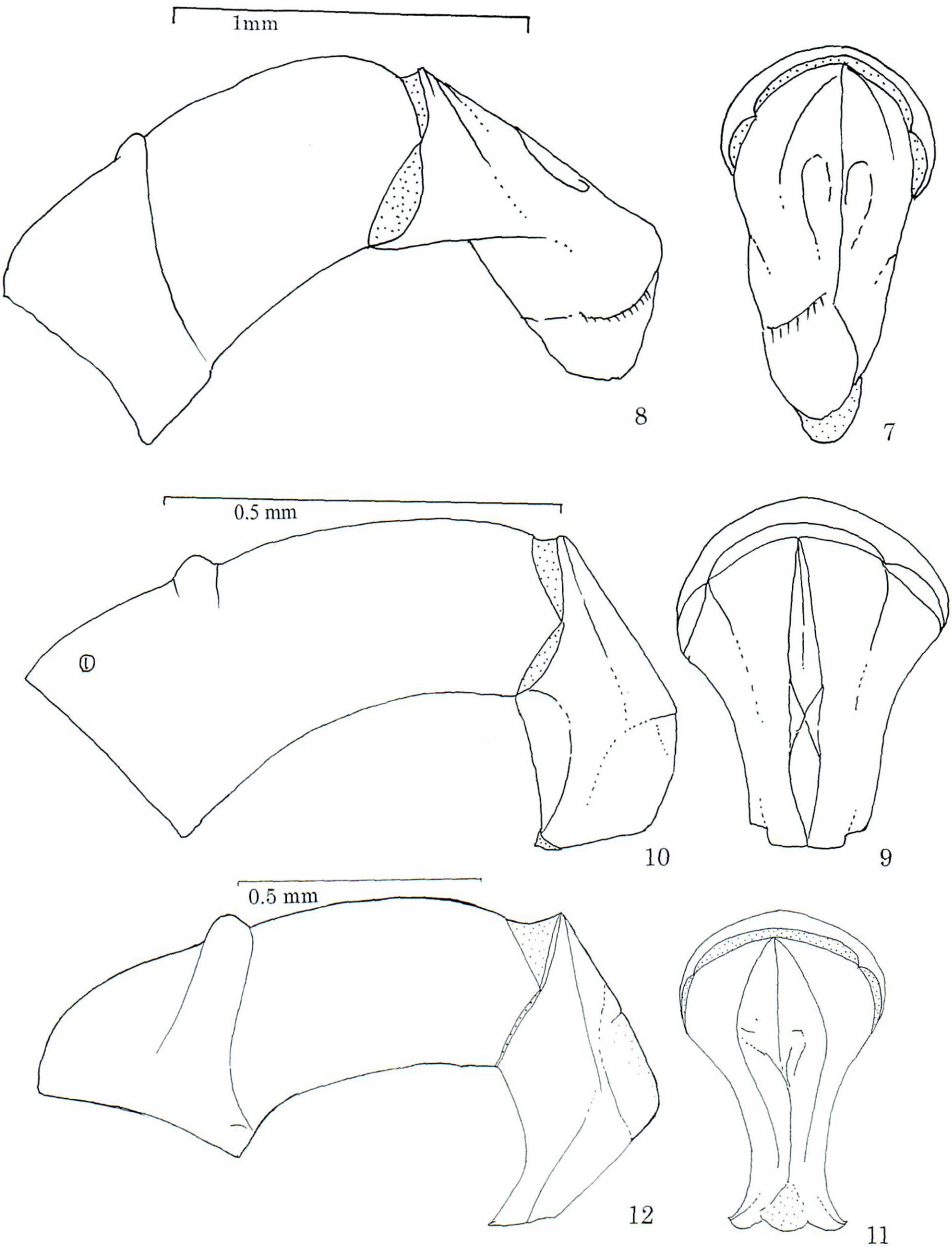
Body subovate, rather strongly convex dorsad, and gently flattened in posterior part; brownish black, apico-lateral parts of head, sutural intervals of elytra, tibiae and tarsi lighter in colour, elytra with a pair of spot-like patches across 6th and 7th intervals near base, hairs on each surface nearly pale brown, those on terminal segments of labial palpi brownish yellow; head and pronotum moderately shining, elytra weakly shining, ventral surface rather alutaceous, legs moderately shining; dorsal surface covered with short suberect hairs, ventral surface covered with short recumbent bristles.

Male. Head somewhat wide, pentagonal, gently inclined anteriad; clypeus broad, strongly produced anteriad, noticeably reflexed in front, feebly convex in medio-posterior part, scattered with fine punctures, which become smaller anteriad, fronto-clypeal border indistinct; genae elongated subrhombical, bordered from clypeus by sulci in anterior parts or low ridges in posterior parts, feebly inclined postero-laterad, rather closely punctate, with outer margins obtusely angulate and finely rimmed; frons rather small, weakly depressed in middle, scattered with punctures; vertex gently raised posteriad, rather strongly punctate and bristled in anterior part, closely and finely punctate in posterior part, with a low transverse impunctate humps in the middle. Eyes subcrescent-shaped, feebly rimmed along interior and exterior margins.

Pronotum wider than long (4 : 3), widest at the middle; apex gently, widely emarginate, wholly, very finely rimmed; front angles slightly obtuse, hind angles indistinct; base roundly produced, feebly angulate at the middle, bordered by small punctures; sides steeply inclined and convex laterad, with lateral margins bordered and finely rimmed; disc rather strongly convex, fairly closely scattered with small scaled punctures, with a subconical swelling at the middle of anterior 1/3, whose anterior part is slightly depressed and inclined anteriad.

Elytra shallowly punctato-striate, the punctures in striae rather transverse and notching intervals; intervals rather wide, very feebly convex, with two or three rows of small, slightly transverse punctures, each with a short blistle, whose apical part is weakly bent.

Pygidium gently convex, scattered with somewhat ovate punctures, each with a fine suberect blistle. Aedeagus distinctly small. Phallobase about 0.6 mm in length, about 0.3 mm in



Figs. 7–12. *Onthophagus* spp, male genitalia.— 7–8, *Onthophagus* (*Onthophagus*) *pimpasaleei* sp. nov., 7, frontal view, 8, lateral view; 9–10, *O.* (*O.*) *mordindangus* sp. nov., 9, frontal view, 10, lateral view; 11–12, *O.* (*O.*) *samoengus* sp. nov., 11, frontal view, 12, lateral view.

apical width. Parameres short, about 0.3 mm in length, almost simply formed in dorsal aspect, with apex obtuse, not sharply pointed in lateral aspect.

Legs ordinary in shape in members of *Onthophagus*; protibiae with four outer teeth, terminal spur rather bold; ratios of the lengths of spur of metatibia and metatarsal segments: 0.89; 1.00, 0.47, 0.26, 0.19, 0.45.

Female. Unknown.

Body length: 3.7 mm.

Type Series. Holotype: ♂, Khon Kaen, NE. Thailand, Chicken Meat, 9. VIII. 2008, K. MASUMOTO leg. (NSMT).

Notes. The present new species closely resembles *Onthophagus* (*Onthophagus*) *bonorae* ZUNINO, 1976, from Thailand, but can be easily distinguished from the latter by the body much smaller, the elytra with very wide intervals (at most rather wide in *O. bonorae*), the strial punctures large, transverse and obviously notching intervals (smaller and slightly notching intervals in *O. bonorae*), 2nd to 6th intervals with usually two, occasionally three, irregularly arranged longitudinal rows of small punctures (usually three irregularly arranged rows of small punctures in *O. bonorae*), the pronotum in male with a small tubercle at the middle, whose anterior portion is not flattened (a small tubercle at the middle, whose anterior portion is strongly flattened in *O. bonorae*), and the aedeagus obviously smaller and parameres short and not pointed apicad (the former larger and the latter strongly and sharply projected apicad in lateral view in *O. bonorae*).

The specific name is taken after the place inside Khon Kaen University where this species was collected.

Onthophagus* (*Onthophagus*) *samoengus sp. nov.

(Figs. 3, 11–12)

Body short ovate, gently convex dorsad, weakly flattened in posterior parts; dark reddish brown, posterior parts of genae, vertex, basal margin of pronotum, major parts of elytra darker in colour, antennal clubs covered with fine pale yellowish hairs, antennal funicles, mouth parts, ventral side of neck, and legs lighter in colour; dorsal surface rather strongly, feebly vitreously shining, metasternal shield moderately shining, the remaining parts of ventral surface mostly weakly or alutaceously shining; dorsal surface and legs almost glabrous, ventral surface clothed with fine decumbent bristles.

Male. Head transversely subelliptical; clypeus gently inclined anteriad, feebly produced apicad, scattered with minute punctures, with apical margin noticeably reflexed and weakly emarginate in the middle, the fronto-clypeal border with a strong anteriad-arcuate ridge, the clypeo-genal borders sulcate and reaching outer margins; genae subrhombic, roundly produced laterad, slightly concave in areas before eyes, scattered with small punctures, which are larger than those on clypeus; frons rather trapezoidal, transversely concave, with scattered minute punctures, which are similar in size to those on clypeus, bordered from vertex with a transverse ridge, which is shorter than that on fronto-clypeal border; vertex feebly inclined posteriad from the border of frons, with major medial part impunctate. Eyes slightly larger than those in members of *Onthophagus*, subcrescent-shaped, not reaching outer margins.

Pronotum wider than long (10 : 7); apex gently, widely emarginate, almost straight in middle, wholly, very finely rimmed; front angles feebly acute in dorsal view, hind angles indistinct; base moderately rounded, wholly finely bordered, with a row of minute punctures along margin, thus, seen as being crenulate; sides gently declined to lateral margins, which are roundly produced, and wholly, finely rimmed; disc rather strongly convex, scattered with small punctures, each with a short microscopic scale.

Elytra clearly punctato-striate, the punctures in striae notching intervals, and often with short transverse or oblique depressions on each side; intervals rather wide and moderately convex, very weakly rugulose, irregularly scattered with microscopic punctures, each with a microscopic short scale.

Pygidium gently convex, weakly rugulose in lateral parts, scattered with shallow punctures, each with a microscopic scale. Aedeagus somewhat robust. Phallobase about 1.0 mm in length, about 0.5 mm in apical width. Parameres about 0.6 mm in length, with lateral portions distinctly narrowed from base to apices, which are slightly protrudent laterad as sharp teeth in dorsal view; apico-ventral portion sharply pointed apicad in lateral view.

Legs ordinary in shape in members of *Onthophagus*; protibiae with four outer teeth; terminal spur slender, sharp at apex; ratios of the lengths of spur of metatibia and metatarsal segments: 0.86; 1.00, 0.32, 0.26, 0.22, 0.37.

Female. Unknown.

Body length: 4.6 mm.

Type Series. Holotype: ♂, Ban Angkhai, Samoeng District, Chiang Mai Prov., N. Thailand, 20. V. 1997, K. MASUMOTO leg. (NSMT).

Notes. The present new species closely resembles *Onthophagus* (*Onthophagus*) *rana* ARROW, 1931, from South India, but can be distinguished from the latter by the body obviously smaller, the clypeal margin weakly emarginate at the apex (entirely straight in *O. rana*), the head with a distinctly arcuate transverse ridge on the fronto-clypeal suture (with a straight transverse ridge in *O. rana*), and also with a ridge in middle of the posterior portion on the border of frons and vertex (with a bluntly tubercule in *O. rana*), the pronotum covered with strong punctures (with fine punctures in *O. rana*), and the elytra normal in size (noticeably long in *O. rana*).

The specific name is taken after the name of the district, where this species was collected.

***Onthophagus* (*Serrophorus*) *chulapornus* sp. nov.**

(Figs. 4, 15–16)

Body oblongo-ovate, gently convex dorsad, and feebly flattened in posterior part; brownish black, antennal funicles, mouth parts, ventral side of head and tarsi lighter in color, dorsal side of head and prontoum with feeble coppery tinge, elytra dark orange with blackish patches: a small subobvate patch on 5th interval close to base, a subquadrate patch at humeral part, small patches slightly before the middle of 3rd and 5th intervals, a large ill-shaped patch across 5th interval to lateral margin, elongate patches slightly behind the middle of 2nd, 3rd, 4th, and 5th intervals, and an oblong patch across 3rd to 7th intervals near apices (patches often becoming larger or smaller, and fused one another); head and pronotum weakly metallically shining, elytra feebly sericeously shining, ventral surface weakly shining, legs moderately shining; antennal clubs with fine yellowish hairs, dorsal surface with yellowish decumbent hairs.

Male. Head somewhat pentagonal, gently inclined anteriad, with outer margin reflexed; clypeus rather broad and subtrapezoidal, produced anteriad, closely punctato-granulate, each puncture with a fine recumbent bristles, fronto-clypeal border ridged and gently curved; genae subrhombical, feebly depressed in areas before eyes, closely granulate, furnished with suberect hairs, finely ridged along the border of clypeus and frons; frons rather small, gently produced anteriad and narrowed posteriad, closely punctato-granulate, each puncture with a suberect hair, which are shorter than those on genae; vertex with a low conical horn at the middle near posterior margin. Eyes subcrescent-shaped, feebly rimmed along interior andexterior margins.

Pronotum slightly wider than long (10 : 9); apex gently, widely emarginate, wholly finely rimmed; front angles acute, hind angles indistinct; base feebly roundly produced, angulate at the middle, bordered by small punctures and finely rimmed; sides gently inclined laterad in anterior and posterior parts, rather steeply so in medial parts, finely rimmed along lateral margins, with a pair of swellings at anterior 2/5; disc gently convex, closely covered with subovate granules, scattered with small punctures, each with a long fine hair.

Elytra finely punctato-striate, the punctures in striae round and feebly notching intervals; intervals weakly convex, weakly covered with isodiametric microsculpture, closely punctate, the punctures with fine hairs, often fused one another, and becoming rugosities.

Pygidium gently convex in middle, weakly covered with isodiametric microsculpture, rather closely punctate, the punctures often transversely fused one another, each with a fine subdecumbent hair. Aedeagus rather elongate. Phallobase about 1.4 mm in length, 0.17 mm in apical width. Parameres about 0.7 mm in length, obviously wide and quadrate in outline in dorsal view, latero-apical tooth on each side well-visible in both dorsal and lateral views.

Legs stouter in shape than those in members of *Onthophagus*; protibiae with four outer teeth, terminal spur rather bold and hooked; ratios of the lengths of spur of metatibia and metatarsal segments: 0.97; 1.00, 0.49, 0.29, 0.22, 0.47.

Female. Head more coarsely covered with granules; clypeus slightly less strongly produced anteriad; pronotum less strongly widened.

Body length: 7.8–9.0 mm.

Type Series. Holotype: ♂, Chulaporn Dam, Chaiyaphum Prov., F3 / 11, Nocturnal, 1. II. 2008, Y. HANBOONSONG leg. (EMKKU). Paratypes: 3 exs., Chulaporn Dam, Chaiyaphum Prov., F2 / 7, Diuranal, 20. III. 2008, Y. HANBOONSONG leg.; 6 exs., Chulaporn Dam, Chaiyaphum Prov., F1 / 17, Necturnal, 1. II. 2008, Y. HANBOONSONG leg.

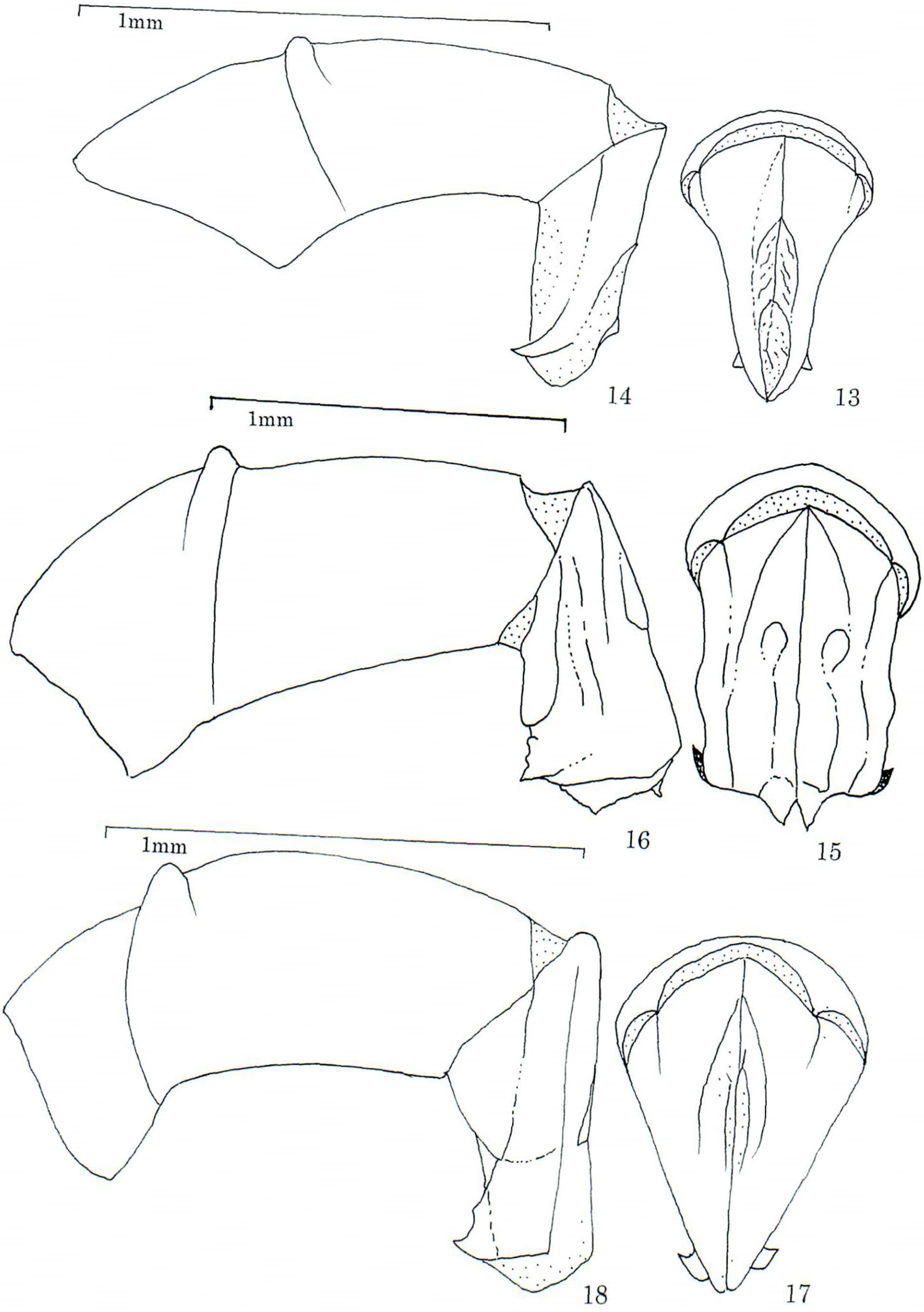
Notes. The present new species is closely related to *Onthophagus* (*Serrophorus*) *mulleri* LANSBERGE, 1883, from Borneo, but can be distinguished from the latter by the body much smaller, the head less strongly produced forward and more clearly transverse, with the clypeus trapezoidal in outline (the head strongly produced forwards, with the clypeus parabolic in outline in *O. mulleri*), the genae more strongly produced laterad, intervals of the elytra fairly densely covered with simple punctures (densely covered with asperate punctures in *O. mulleri*), and the parameres quite differently shaped.

The specific name is taken after the place (Chulaporn Dam), where this species was collected.

***Onthophagus* (*Serrophorus*) *thailaevis* sp. nov.**

(Figs. 5, 17–18)

Body short ovate, gently convex dorsad, weakly flattened; dark reddish brown, marginal parts of clypeus and genae, ventral side of neck and legs lighter in colour, antennal funicles pale yellow with feeble reddish tinge, antennal stalks and maxillary palpi reddish brown; dorsal surface and metasternal shield rather strongly, vitreously shining, abdomen weakly shining; dorsal



Figs. 13–18. *Onthophagus* spp., male genitalia.—— 13–14, *O.* (*Furconthophagus*) *boucomonti* PAULIAN; 13, frontal view; 14, lateral view; 15–16, *O.* (*Serrophorus*) *chulapornus* sp. nov.; 15, frontal view; 16, lateral view; ——17–18, *O.* (*Serrophorus*) *thailaevis* sp. nov.; 17, frontal view; 18, lateral view.

surface and legs almost glabrous, ventral surface clothed with fine rather long hairs.

Male. Head slightly transversely elliptical; clypeus rather wide, noticeably ruguloso-punctate, gently inclined and produced apicad, with apical margin rather noticeably reflexed and very weakly emarginate in the middle, the fronto-clypeal border with an anteriorly curved ridge, the clypeo-genal borders also ridged; genae subelliptical, slightly inclined laterad, feebly concave in areas before eyes, roundly produced laterad, scattered with somewhat ovate punctures; frons rather narrow and flattened, gradually raised posteriad, rather sparsely scattered with shallow punctures; vertex not defined from frons, with posterior margin noticeably raised in middle and forming a subconical horn. Eyes medium-sized in members of *Onthophagus*, subcrescent-shaped, feebly rimmed along interior and exterior margins, reaching outer margins.

Pronotum wider then long (5 : 4); apex widely, gently emarginate, wholly rimmed; front angles acute in dorsal view, hind angles indistinct; base moderately widely triangular, with round sides, margined by a row of minute punctures and finely rimmed; sides gently declined to lateral margins which are roundly produced, and wholly rimmed; disc gently, rather transversely convex, weakly depressed in medio-posterior part, rather steeply inclined postero-laterad near hind angles, scattered with shallow punctures, these in postero-larteral parts becoming smaller, only 1/5 times the diameter of those in anterior parts.

Elytra punctato-striate, the striae margined by fine rims, the punctures in striae slightly transverse and notching intervals, somewhat produced appearance of links in a chain; intervals gently convex, irregularly scattered with microscopic punctures; basal-lateral parts with oblique impressions.

Pygidium gently convex, with shallow punctures, which are slightly ovate and bear a microscopic bristle in each. Aedeagus with phallobase about 1.1 mm in length, 0.5 mm in apical width. Parameres relatively large, about 0.6 mm in length, with lateral portions gradually narrowed apicad in dorsal view; a small tooth well-visible near each apex in dorsal view, which has two sharp points on the posterior edge.

Legs rather stout in shape; protibiae with three strong and one small (the fourth) outer teeth; terminal spur sharp, bent ventrad at apex; ratios of the lengths of spur of metatibia and metatarsal segments: 0.94; 1.00, 0.48, 0.31, 0.24, 0.39.

Female. Head with clypeus more strongly rugulose, fronto-clypeal border more strongly ridged; frons depressed. Legs with outer margins more strongly toothed.

Body length: 6.6–7.7mm.

Type Series. Holotype: ♂, "*Onthophagus* sp. no. 46" (collecting data unclear) (EMKKU). Paratypes: 1 ex., Ban Angkhai, Samoeng District, Chiang Mai Prov., N. Thailand, 21. V. 1998, K. MASUMOTO leg.

Notes. The present new species resembles *Onthophagus* (*Serrophorus*) *laevis* HAROLD, 1880, described from Sumatra, but can be easily distinguished from the latter by the body much smaller, the head with the clypeus strongly and transversely rugulose (sparsely covered with vague small punctures in *O. laevis*), genae weakly produced laterad (strongly produced laterad in *O. laevis*), strial punctures of elytral striae distinct and slightly notching each margin of intervals (very weak, especially on the internal intervals, and scarcely notching each margin in *O. laevis*), the protibiae with four sharp external teeth (with rather obtuse four external teeth in *O. laevis*), and the male genitalia obviously smaller with the parameres differently shaped.

The specific name is given after the most resembling species, *Onthophagus laevis*, and add "Thai" to the forefront of the specific name.

Revival and Redescription of a Suppressed Specific Name

Onthophagus (*Furconthophagus*) *boucomonti* PAULIAN, 1931

(Figs. 6, 13–14)

Onthophagus boucomonti PAULIAN, 1931, Bull. Soc. ent. Fr, 36 : 270.

O. (*Onthophagus*) *papulatus* ab. *Boucomonti* PAULIAN, 1945, Fn. Emp. Fr. Col. Sca. Indochine, Paris, 3 : 125 ; — BALTHASAR, 1963, Monogr. Scarab., 2: 467.

O. (*Furconthophagus*) *papulatus* : KABAKOV and NAPOLOV, 1999, Latvijas Entomolgs, 37: 74 [nec BOUCOMONT].

Body short ovate and strongly convex, flattened in major medial parts of elytra; black with feeble brownish tinge, anterior marginal part of head, areas of front angles and lateral parts in middle of pronotum, patches on elytra (an oblong patch on 4th intervals close to base, a transverse patch across 4th and 5th in middle, a transverse patch across 2nd to 8th close to apex, and a curved patch across 6th to 8th; those patches become larger or smaller in size by individuals), antennal funicles, mouth parts, tibiae and tarsi reddish brown, hairs of antennal clubs pale yellow, bristles on body surface pale yellow to dark yellow, hairs on ventral surface pale yellow to reddish brown; head rather strongly, somewhat vitreously shining, pronotum opaque, elytra weakly, rather alutaceously shining, ventral surface weakly shining; head almost glabrous, pronotum rather densely covered with decumbent bristles, elytra moderately covered with decumbent bristles, metasternal shield and abdomen moderately covered with recumbent bristles, and legs haired.

Male. Head subrhombical, rather flattened; clypeus feebly inclined anteriad, weakly covered with isodiametric microsculpture, rather sparsely scattered with somewhat transverse punctures, which are furnishied with recumbent bristles, sparsely intermixed minute punctures, and often form rugulosities in antero-lateral parts; apical margin of clypeus gently produced and rather strongly reflexed, the reflexion noticeably emarginate at the middle and bilobed on each side; genae rather oblong, weakly depressed postero-laterad, rather coarsely, irregularly punctate, each puncture with a rather long suberect bristle, with outer margins rounded; frons very weakly covered with isodiametric mircosculpture, sparsely scattered with large punctures with bristles in lateral parts, also sparsely scattered with minute punctures, with a subconical upright horn at the middle of the border of vertex in large male. In small sized male, head with two arcuate ridges (one on fronto-clypeal border and the other on the border of frons and vertex), which are similar to those on female. Eyes narrowly crescent-shaped, rimmed along interior and exterior margins.

Pronotum wider than long (7 : 5), widest at the middle; apex gently, widely emarginate, feebly produced in middle, finely rimmed; front angles acute and hooked, directing anteriad and slightly laterad, hind angles indistinct; base widely rounded, finely bordered; sides rather steeply declined to lateral margins, which are roundly produced, finely rimmed; disc convex antero-dorsad, longitudinally grooved along the midline in posterior 2/3, steeply declivous in front, very feebly swollen in the middle of upper edge of the declivity, wholly covered with isodiametric microsculpture, and also covered with granulate punctures (thus being rather asperate), each puncture with a decumbent bristle.

Elytra moderately punctato-striate, the punctures in striae rather notching intervals; intervals rather wide, weakly convex, covered with isodiametric microsculpture, usually with two rows of granulate punctures, each with a recumbent bristle.

Pygidium moderately convex, covered with isodiametric microsculpture, scattered with small punctures, each with a bristle, whose apical part is bent. Aedeagus somewhat elongate. Phallobase about 1.2 mm in length, about 0.5 mm in apical width. Parameres about 0.6 mm in length, each distinctly narrowing from base to apex, with a slight lateral tooth, which is situated near the apex of ventral face in dorsal and lateral views.

Legs ordinary in shape in members of the subgenus; protibiae with four strong outer teeth; terminal spur acute, weakly curved ventro-exterirad; ratios of the lengths of spur of metatibia and metatarsal segments: 0.97; 1.00, 0.39, 0.24, 0.21, 0.47.

Female. Head wider; clypeus with apical lobes more strongly produced; fronto-clypeal border with an arcuate ridge; fronto-vertex border with a distinct ridge, whose posterior part gently inclined, and sparsely scattered with small haired punctures. Compared with small male (usually similar to female in general feature), head obviously wider, protibial teeth stronger, and 6th abdominal segments with central part not narrowed by pygidium.

Body length: 3.8–5.2 mm.

Specimens examined: 24 exs., Phrao, Chiang Mai Prov., N. Thailand, 15. VI. 1988, Y. MANIT leg.; 19 exs., Phrao District, Chiang Mai Prov., N. Thailand, 1986–1987, Y. MANIT leg.; 10 exs., Maesa Village, Chiang Mai Prof., N. Thailand, 1987–1988, Y. MANIT leg.; 8 exs., Maetaeng District, Chiang Mai Prov., N. Thailand, 1987–1988, Y. MANIT leg.; 1 ex., Chom Thong, Chiang Mai Prov., 24. III. 1988, no collector's name.

Notes. *Onthophagus boucomonti* was originally described as a full species by PAULIAN (1931). It was downgraded as an aberration of *O. papulatus* BOUCOMONT by the same author (1945, p. 25). Later, KABAKOV and NAPOLOV (1999, p. 74) referred that KABAKOV had treated it as a junior synonym of *O. papulatus* "in litt."

On the occasion of the revisional study concerning Thai *Onthophagus*, the present authors had an opportunity of a detailed study about this species. They came to the conclusion that *O. boucomonti* is clearly different from the true *O. papulatus* originally described from Borneo.

The former can be easily distinguished from the latter by the elytra with striae clearly narrower, the pronotum being simply formed and the surface strongly micro-granulose particularly in female (briefly declivous in front with the upper edge of the declivity obtusely and transversely ridged, and the surface rather weakly so in the latter), the head more deeply and narrowly incised in the middle with each side of the incision lobed in female, and male genitalia obviously shorter than that of the latter.

Distriution. N.Thailand.

New Distributional Records

Onthophagus (*Onthophagus*) *rorarius* HAROLD, 1877

Onthophagus rorarius HAROLD, 1877, Ann. Mus. Civ. Genova, 10: 53.

Specimen examined. 1 ex., Moist evergreen forest. Khao Luang NP. Nakhonsitammarat, 10. VIII. 2000, Y. HANBOONSONG leg. (EMKKU).

Distribution. Sumatra, Borneo, Sulawesi; N. Thailand [new record].

Onthophagus* (*Parascatonomus*) *muticifrons ENDRÖDI, 1973

Onthophagus (*Onthophagus*) *muticifrons* ENDRÖDI, 1973, Časopis Slezského Musea, Acta musei Siresiae, A, 22: 122.

Specimen examined. 1 ex., Doi Suthep, Chiang Mai Prov., N. Thailand, 16. VII. 2007, (D-210). H. BÄNZIGER leg. (EACU).

Distribution. N. Vietnam; Thailand [new record].

Onthophagus* (*Onthophagiellus*) *kawaharai OCHI et KON, 2007

Onthophagus (*Onthophagiellus*) *kawaharai* OCHI et KON, 2007, Kogane, Tokyo, (8): 93.

Specimens examined. 1 ex., Fang, Chiang Mai Prov., N. Thailand, 25. XI. 1988, K. MASUMOTO leg. (NSMT); 1 ex., NE. Thailand (place and collector unknown).

Distribution. Kalimantan (Borneo); N. & NE. Thailand [new record].

Onthophagus* (*Onthophagiellus*) *hidakai OCHI et KON, 1995

Onthophagus (*Onthophagiellus*) *hidakai* OCHI et KON, 1995, Elytra, Tokyo, 23: 49.

Specimens examined. 1 ex., Chulaporn Dam, Chaiyaphum Prov., NE. Thailnad, F1 / 15, Diurnal, 20. III. 2008, Y. HANBOONSONG leg. (EMKKU); 1 ex., Chulaporn Dam, Chaiyaphum Prov., Thailand, F1 / 16, Diurnal, 20. III. 2008, Y. HANBOONSONG leg.

Distribution. Borneo; NE. Thailand [new record].

Onthophagus* (*Paraphanaeomorphus*) *semipiceus KABAKOV, 1998

Onthophagus (*Paraphanaeomorphus*) *semipiceus* KABAKOV, 1998, Entomologicheskoe Obozreniye, St. Petersburg, 77: 365.

Specimens examined. 3 exs., Doi Tung, Chiang Rai Prov., N. Thailand, 14. V. 1996, K. MASUMOTO leg. (NSMT); 2 exs., Doi Tung, Chiang Rai Prov., N. Thailand, 15. V. 1996, K. MASUMOTO leg.; 12 exs., Doi Tung, Chiang Rai Prov., N. Thailand, 14 / 15. V. 2000, K. MASUMOTO leg.

Distribution. Vietnam; N. Thailand [new record].

Onthophagus* (*Paraphanaeomorphus*) *strnadi KABAKOV, 1998

Onthophagus (*Paraphanaeomorphus*) *strnadi* KABAKOV, 1998, Entomologicheskoe Obozreniye, St. Petersburg, 77: 365.

Specimens examined. 11 exs., Kao Yai, Nakhon Ratchashima, NE. Thailand, 29–30. X. 1999, K. MASUMOTO leg. (NSMT, EKKU and OCHI collecton).

Distribution. Vietnam; Thailand [new record].

Onthophagus **(*Gibbonthophagus*)** ***kiyoshii*** OCHI et KON, 2007

Onthophagus (*Gibbonthophagus*) *kiyoshii* OCHI et KON, 2007, Kogane, Tokyo, (8): 89.

Specimens examined. 5 exs., Light trap, 22. XI. 1997, KKU; 1 ex., "Lot 56" (no detailed data); 1 ex.,"3 / 6 / 41"; 1 ex., "12. II. 98". (EMKKU, NSMT, OCHI collection).

Distribution. Palawan; NE. Thailand [new record].

要　約

益本 仁雄・越智 輝雄・Y. HANBOONSONG：タイのエンマコガネ属（*Onthophagus*）の新種について. 4. タイ各地のエンマコガネ属の5新種，1既知異常形の独立種への再処理，及び7既知種の新記録. ——タイの食糞性コガネムシのエンマコガネ属（*Onthophagus*）についての研究シリーズの第4回として，タイ各地のエンマコガネ属の5新種を記載した．すなわち *Onthophagus* (*Onthophagus*) *pimpasaleei* sp. nov., *O.* (*O.*) *mordindangus* sp. nov., *O.* (*O.*) *samoengus* sp. nov., *O.* (*Serrophorus*) *chulapornus* sp. nov., および *O.* (*Serrophorus*) *thailaevis* sp. nov. である．

さらに KAVAKOV らによって *Onthophagus papulatus* BOUCOMONT, 1945 の シノニム とされている *O.* (*Furconthophagus*) *boucomonti* PAULIAN を独立種と認め復活させ，再記載し，タイから記録した．

また既知種7種について，タイを新産地として記録した．*O.* (*Onthophagus*) *rorarius* HAROLD, 1877, *Onthophagus* (*Parascatonomus*) *muticifrons* ENDRÖDI, 1973, *O.* (*Onthophagiellus*) *kawaharai* OCHI et KON, 2007, *O.* (*Onthophagiellus*) *hidakai* OCHI et KON, 1995, *O.* (*Paraphanaeomorphus*) *semipiceus* KABAKOV, 1998, *O.* (*Paraphanaeomorphus*) *strnadi* KABAKOV, 1998, および *O.* (*Gibbonthophagus*) *kiyoshii* OCHI et KON, 2007である．

References

ARROW, G. J., 1931. Coleoptera, Lamericornia III, Coprinae. *In*: *the Fauna of British India including Ceylon and Burma*. i - xii + 1–428 pp., 13 pls., 1 map. Taylor and Francis, London.

BALTHASAR, V., 1963. Monographie der Scarabaeidae und Aphodiidae der palaearktischen und orientalischen Region. 2, Coprinae. 1–628, 16 pls. Tschechoslowakischen Akademie der Wissenschaften, Prag.

BOUCOMONT, A. & J. GILLET, 1921. Fam. Scarabaeidae (Laparosticti). *Faune entomologique de l'Indochine français*, 4: 1–76. Saigon.

ENDRÖDI, S., 1973. Zoological collecting trips of the Hungarian Natural History Museum in North Vietnam (D. R. V.). No. 4. Neue Arten aus der Gattung *Onthophagus* Latr. *Časopis Slezského Musea, Acta musei Siresiae*, A, **22**: 122.

HAROLD, E. von, 1880. Descriptions of three new species of coprophagous Lamellicorn Coleoptera from Sumatra. *Notes from the Leyden Museum*, **2**: 193–196.

HAROLD, E. von, 1877. Ennumération des Lamellicornes Coprophages rapportés de l'archipel Malais, de la Nouvelle Guinée et de Australie boréale par MM. J. Doria, O. Beccari et L. M. d'Albertis. *Annali del Museo Civico di Storia Naturale di Genova*, **10**: 38–109.

KABAKOV, O. N., 1998 a. New and little known species of Lamellicorn Beetles of the genus *Onthophagus* LATR. (Coleoptera, Scarabaeidae) From Vietnam and Laos. *Entomologicheskoe Obozreniye, St. Petersburg*, **77**: 355–366. (In Russian).

KABAKOV, O. N, 1998 b. Studies on the Coprophagous Scarab Beetles (Coleoptera, Scarabaeidae) from

Vietnam in the collections of Zoological Institute St. Petersburg and of the Naturkundemuseum Erfurt. *Veröffentlichungen Naturkundemuseum. Erfurt*, **1998**: 39–58.

KABAKOV, O. N. & A. NAPOLOV, 1999. Fauna and ecology of Lamellicornia of subfamily Scarabaeinae (Coleoptera, Scarabaeidae) of Vietnam and some parts of adjacent countries: South China, Laos and Thailand. *Latvijas Entomologs*, **37**: 58–96.

LANSBERGE, J. W. van, 1883. Révision des *Onthophagus* de l'archipel Indo-neérlandais, avec description des espèces nouvelles. *Notes from the Leyden Museum*, **5**: 41–82.

OCHI, T. & M. KON, 1995. Dung Beetles (Coleoptera: Scarabaeidae) from Sabah, Borneo 2. *Elytra, Tokyo*, **23**: 43–60.

OCHI T. & M. KON, 2007. Notes on the coprophagous scarab-beetles (Coleoptera, Scarabaeidae) from Southeast Asia (XV). Three new species of the genus *Onthophagus* from Palawan and Borneo. *Kogane, Tokyo*, (8): 89–95.

PAULIAN, R., 1931. Coprophages nouveaux pour la faune de Hoa-Binh (Tonkin). *Bulletin de la Société entomologique de France*, **36**: 270–272.

PAULIAN, R., 1945. Coléoptères Scarabéides de l'Indochine. Faune de l'Empire Farnçais, 3. 228 pp. 1 map. Larose, Paris.

ZUNINO, M., 1976. Revisione delle specie paleartiche del sottogenere *Onthophagus* (sensu stricto) LATR. (Coleoptera, Scarabaeoidea). I tipi di H. W. BATES, L. FAIRMAIRE, E. von HAROLD, G. van LANSBERGE, S. A. de MARSEUL, L. REICHE e D. SHARP nel Muséum National d'Histoire Naturelle di Parigi. *Bollettino del Museo di Zoologia dell'Università di Torino*. 30. XII. 1976, (4): 71–110.

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An Addition to the Genus *Procleomenes* (Coleoptera: Cerambycidae) from Laos

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Abstract A new cerambycid beetle from Laos belonging to the genus *Procleomenes* is described under the name *P. humeralis* nov. It is distinguished from the other members of the genus especially the three Laotian species by its broader body with short antennae, conspicuous black spots on the elytral humeri, and completely rounded elytral apices.

Three members of the genus *Procleomenes* have so far been identified from Laos, viz. *P. elongatithorax* GRESSITT et RONDON, *P. nanulus* HOLZSCHUH and *P. morio* HOLZSCHUH (GRESSITT & RONDON, 1970; HOLZSCHUH, 2007). In recent field surveys in the mountainous area of Laos, I succeeded in finding an additional member of the genus, and will describe it in this short paper.

Before going into further details, I wish to express my hearty thanks to Drs. Kiyoshi ANDO, Kiyohiko IKEDA, Hiroaki KOJIMA, Nobuo OHBAYASHI and Takeshi YORO, Messrs. Michiaki HASEGAWA, Yasuhiko ITO, Takashi MIZUSAWA, Junnosuke KANTO, Hiroyuki WAKAHARA, Junsuke YAMASAKO and Hiroshi YANASE for their kind help extended to me in field work, and also due to Mr. Theodore L. CHILDERS for his critical reading of the draft of this short paper.

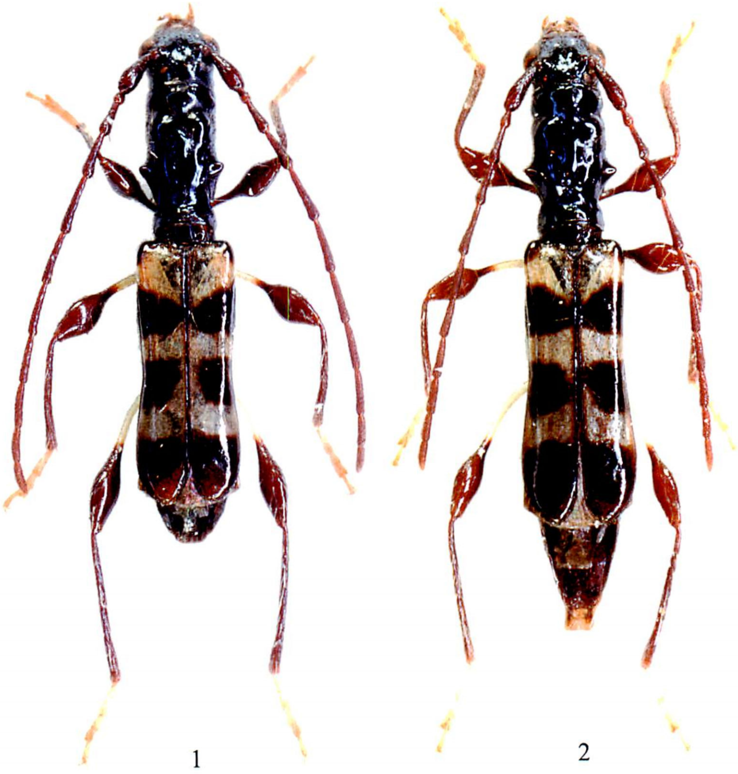
Procleomenes humeralis sp. nov.

(Figs. 1–6)

Body length 4.5–5.0 mm in ♂ or 4.5–7.0 mm in ♀ (measured from apical margin of clypeus to abdominal apex).

Male and female. Colour blackish brown to dark brown, with more or less reddish legs, shiny, with faint bluish green tinge on head and prothorax; elytra pale yellow, decorated with four blackish brown bands, of which the basal band is usually linear though largely covered with humeri, two incomplete bands on basal 3/10 and just behind middle, and a broad band in apical 3/10; antennae unicolored dark brown; legs blackish brown, pale yellow in peduncles of mid and hind femora, and all tarsi.

Head hardly voluminous, distinctly wider than the apical and as long as the maximum width of pronotum, scattered with a few punctures though sparsely provided with large punc-



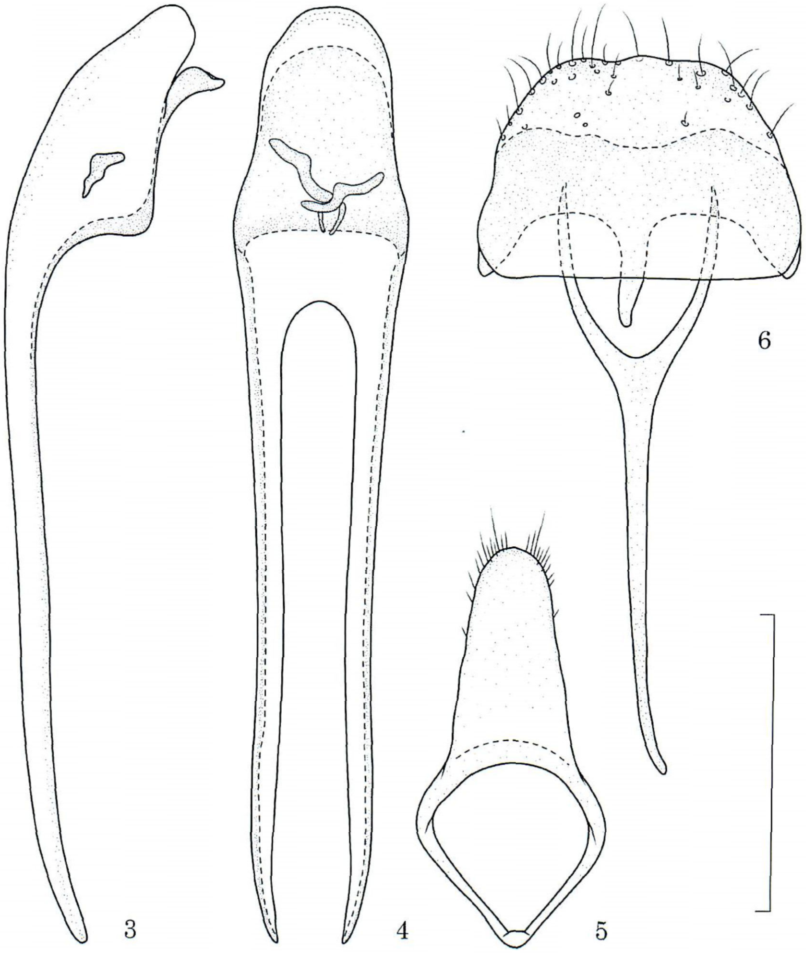
Figs. 1–2. *Procleomenes humeralis* sp. nov. —— 1, Holotype ♂ from Phou Pan, Houaphan Province of Laos; allotype ♀ from the same locality.

tures on frons; genae 1/3 the depth of lower eye-lobes; eyes rather weakly prominent, completely divided into two lobes. Antennae short and not so stout, attaining to abdominal apex in ♂ or elytral apices in ♀, provided with sparse row of long brownish hairs along undersides of segments 2-7, with scape strongly clavate in apical 3/5 and 1.5 times as long as segment 3.

Pronotum twice the length of the apical width in ♀ or a little more so in ♂, nearly a half the length of elytra, almost parallel-sided and hardly dilated to both apex and base, provided with blunt but conspicuous lateral tubercles at basal 3/8; disc with five ordinary swellings moderately raised, entirely smooth on surface though provided with coarse punctures around the median swelling and at the sides, sparsely covered with long pale hairs. Scutellum transverse semicircular, densely clothed with pale pubescence.

Elytra nearly 2.6 times as long as the humeral width, distinctly in basal or a little in the maximum wider than pronotum, attaining to the base of tergite 7 in ♂ or the base of tergite 6 in ♀, slightly exposing the sides of metathorax, narrowly dehiscent in apical sixth; sides with moderately prominent humeri, straightly convergent to middle then distinctly arcuate to apices which are completely rounded; disc entirely flattened, sparsely scattered with shallow punctures and long pale hairs.

Ventral surface scattered with a few punctures except for prosternum which is strongly rugose near middle, sparsely clothed with pale hairs.



Figs. 3–6. Male genital organ and abdominal segments of *Procleomenes humeralis* sp. nov. —— 3, Median lobe in lateral view; 4, ditto in dorsal view; 5, tegmen in dorsal view; 6, abdominal segment 8 and speculum gastrale in dorsal view. Scale 0.5 mm.

Legs long, not so stout, with hind femur moderately swollen in apical 2/5.

Male genital organ: Median lobe relatively slender, with apical lobe moderately convex even near bluntly rounded apex in profile, broadly rounded at apex in dorsal view; ventral plate shorter than dorsal plate, strongly turned up just behind apical margin; median struts 7/10 the length of median lobe. Tegmen 4/5 the length of median lobe, with paramere spatular, weakly narrowed to apex which is sparsely clothed with setae. Tergite 8 semicircular, with broadly truncate apical margin which is sparsely clothed with setae.

Type series. Holotype ♂, Phou (=Mt.) Pan, 1,700~2,000m in alt., Ban Saleui, Houaphan Province of Laos, 29. III. 2005, T. NIISATO leg. Allotype ♀, same locality as the holotype, 16-IV.~15. V. 2004, MAI & TON leg. Paratypes (4♂♂, 12♀♀): 1♀, Phou (=Mt.) Pan, 1,700~2,000m in alt., Ban Saleui, Houaphan Province, H. WAKAHARA leg.; 1♂, same locality as the preceding, 9. IV. 2004, MAI & TON leg.; 1♂, 2♀♀, same locality as the preceding, 10~13. IV. 2004, T. NIISATO leg.; 1♂, 3♀♀, same locality as the preceding, 16. IV.~15. V. 2004, MAI

& TON leg.; 1♀, same locality as the preceding, 24~27. III. 2005, MAI & TON leg.; 1♂, 1♀, same locality as the preceding, 28~29. III. 2005, T. NIISATO leg.; 1♀, same locality as the preceding, 28~30. III. 2005, N. OHBAYASHI leg.; 1♀, same locality as the preceding, 28~30. III. 2005, J. YAMASAKO leg.; 1♀, Phou (=Mt.) Samsoun, 2,000m in alt., Xiengkhouang Province of Laos, 22. III. 2008, H. WAKAHARA leg.; 1♀, same locality as the preceding but 1,940m in alt., 2. V. 2008, T. NIISATO leg. The holotype and allotype are preserved in the National Museum of Nature and Science, Tokyo, and the paratypes are in the private collection of NIISATO.

Distribution. Central and northeastern Laos.

Notes. The present new species is easily distinguished from the three Laotian members of the genus by its broader body with short antennae which are only as long as body even in the male, conspicuous blackish spots on the elytral humeri and completely rounded elytral apices.

要約

新里 達也：ラオスから見つかったクビナガケナガカミキリ属の1新種．———ラオスのクビナガケナガカミキリ属は，属の基準種 *Procleomenes elongatithorax* のほかに，最近になって *P. nanolus* と *P. morio* の2種が新しく記載されている．本論文では，同国のホゥアパン州とシェンクゥアン州の山岳地帯から新たに発見された第4番目の種，*P. humeralis* nov. を命名記載した．本新種は，太短い体，雄でも腹端に達するにすぎない短い触角，翅鞘肩部を完全に包む基部黒帯，完全に丸まる翅鞘端などの特徴から，既知種との区別は容易である．

References

GRESSITT, J. L., & J. A. RONDON, 1970. Cerambycids of Laos (Disteniidae, Prioninae, Philinae, Aseminae, Lepturinae, Cerambycinae). *Pacific Insect Monograph*, **24**: 1–314.

HOLZSCHUH C., 2007. Beschreibung von 80 neuen Bockkäfern aus der orientalischen und palaearktischen Region, vorwiegend aus China, Laos und Borneo (Coleoptera, Cerambycidae). *Entomologica Basilensia et Collectionis Frey*, **29**: 177–286.

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Ent. Rev. Japan, **63** (2): 175–179, December 25, 2008

Notes on the Coprophagous Scarabaeid Beetles (Coleoptera, Scarabaeidae) from Southeast Asia (XVII)

A New Species of *Cyobius* from Laos

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Abstract A new species of the genus *Cyobius* is described under the name of *C. tsukamotoi* sp. nov. from Laos.

Cyobius SHARP, 1875 is a peculiar-formed genus of the tribe Onthophagini, which is characterized by the very compact body, the short and broad plate-like legs and the remarkably reduced tarsi (KRIKKEN, 1971; OCHI *et al.*, 2006).

Of late, we have had an opportunity to examine many specimens of Scarabaeidae collected in Indochina through the courtesy of Mr. Keiichi TSUKAMOTO, Kyoto City, and we found some specimens of a peculiar-formed scarabaeid species with plate-shaped femora and tibiae from Laos in the collection. After a close examination, we concluded that it is assigned to the gunus *Cyobius* and is new to science. This is the first record of this genus from an area other than the Sundaland.

Cyobius tsukamotoi sp. nov.

(Figs. 1–5)

Length: 3.8–4.1 mm; width; 2.3–2.5 mm (n = 5).

Body small-sized, oval to broadly oval, strongly convex above, with pronotum and elytra perfectly continuous, without distinct constriction between them; dorsal surface rather smooth and shining, almost glabrous; ventral surface shining and smooth including femora and tibiae, partly clothed with yellowsih hairs, with anterior and lateral margins of head somewhat closely fringed with short white yellowish hairs. Color uniformly black, tinged with slight purplish luster on head; anterior marginal portion of head, anterior angles of pronotum and legs somewhat dark reddish brown to chocolate brown; mouth-parts, palpi, legs and antennal foot-stalks reddish

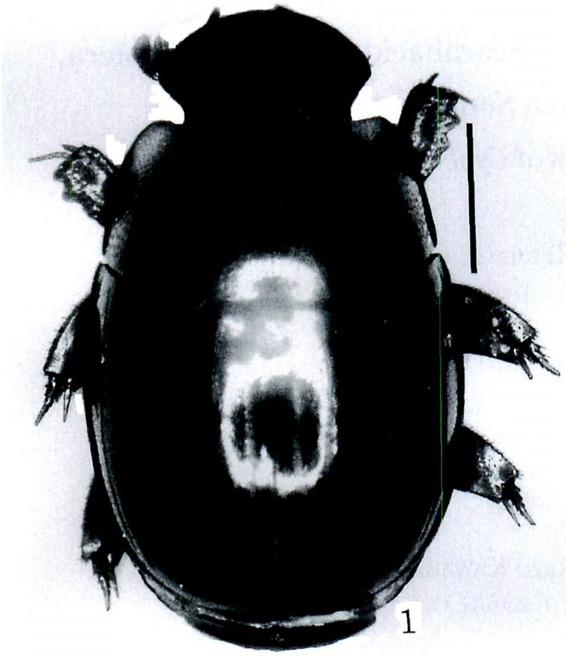


Fig. 1. Habitus of *Cyobius tsukamotoi* sp. nov., holotype, male dorsal view. Scale 1mm.

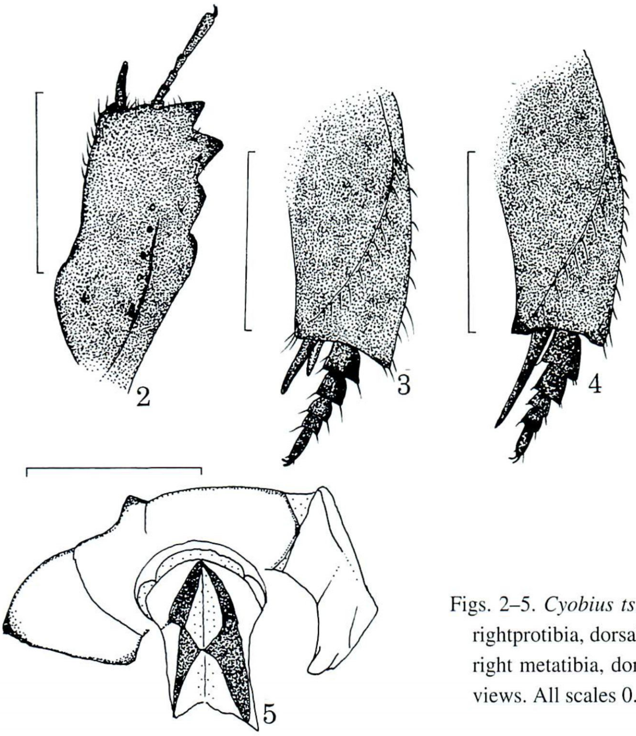
brown; club segments of antennae reddish brown to pale reddish brown.

Male. Head simply formed, without ornaments, widely transverse, somewhat pentagonal in outline, about 1.7 times as wide as long (n = 1), weakly and transversely depressed along anterior margin; clypeus rather produced forward, with clypeal margin rounded or parabolic in outline, finely bordered and slightly reflexed; frontoclypeal suture completely effaced; genal sutures fine and not carinate, extending to a little before the level of anterior margins of eyes; genae strongly produced laterad, with margins finely bordered, genal corners obtusely angled, the angle slightly more obtuse than rectangular; posterior portion of head entirely simple though only slightly and evenly convex in the middle; surface sparsely and very finely punctate in the middle, the punctures becoming denser and coarser toward marginal portions.

Pronotum simply formed, strongly and evenly convex above, about 1.2 times as wide as long (n=1), without a median longitudinal depression; anterior margin emarginate, distinctly bordered, the marginal border not strong; lateral margins almost straight and gently narrowing from base to apical fourth, and then curved inward toward apices, strongly bordered; anterior angles strongly produced forward, almost rectangular and rounded apicad; posterior angles very distinct though obtuse; basal margin gently rounded, without marginal border; surface densely covered with shallow, rather coarse and elliptic punctures, the punctures becoming slightly sparser, smaller and round in shape on antero-median portion.

Elytra strongly and evenly convex, about 1.3 times as wide as long (n = 1), with 8 striae including one along epipleural margin; lateral margins strongly bordered as well as in *L. hashimi*; each stria finely and shallowly impressed with strial punctures small, dense, transverse, slightly notching both margins of intervals; 7th stria curved, gradually approaching to 6th and extending to just before base; intervals entirely flat, sparsely covered with very fine punctures; 8th interval almost flat at base, without a distinct humeral callus.

Pygidium distinctly transverse, strongly and rather evenly convex, clearly carinate at base,



Figs. 2–5. *Cyobius tsukamotoi* sp. nov., male, scale 1 mm. 2, rightprotibia, dorsal view; 3, right mesotibia, dorsal view; 4, right metatibia, dorsal view; 5, aedeagus, lateral and dorsal views. All scales 0.5mm.

sparsely covered with fine punctures. Metasternum with median portion sparsely and very finely punctate in the middle, the punctures becoming denser and slightly larger behind; lateral portions densely and coarsely punctate. Abdomen with apparently six sternites; 1st sternite arranged with two or three transverse rows of punctures which are fine in middle and coarse laterally, 2nd to 5th sternites with transverse rows of similar punctures as those on 1st sternite though the punctures increasing in number laterad, 6th with scattered with similar punctures. Profemora very broad, about 1.4 times as long as wide (n = 1), sparsely and finely punctate, the punctures finely scratch-shaped. Meso- and metafemora almost sub-circular in outline, sparsely and finely pun-ctate, the punctures becoming slightly larger distally; the former about 1.3 times as long as wide (n = 1), the latter about 1.4 times as long as wide (n = 1). Protibiae with four external teeth weak and rounded, 1st tooth rather short, 2nd a little larger than 1st, 3rd slightly smaller than 2nd, 4th small and very obtuse; apical margin distinctly and rather obliquely truncate though inner distal end rounded; internal margin slightly and roundly protrudent laterad near base, not notched; protarsi small and slender, with each segment almost same width, last segment elongate, slightly longer than 3rd and 4th segments combined. Meso- and metatibiae strongly dilated and plate-like. Meso- and metatarsi reduced and very short; mesotarsi about 0.3 mm in total length (n = 1), the 1st segment 0.1 mm in length (n = 1), about 1/3 length of the remaining segments combined; 1st to 5th segments noticeably and successively decreasing in width apically; metatarsi also about 0.3 mm in total length (n = 1), 1st segment about 0.1 mm in length (n = 1), about 1/3 length of the remaining segments combined, 1st to 5th segments similarly decreasing in width apically as well as the mesotarsi.

Aedeagus rather slender. Phallobase about 0.8 mm in length (n = 1). Paramerers about 0.5 mm in length (n=1); in dorsal view, both sides of parameres gradually narrowing in basal three-fourths toward apices, and then only slightly broadened laterad; in lateral view, apex distinctly produced ventrad as a small distinct tooth.

Female. Pronotum simply formed as well as in male, though less highly convex than in male. Protibiae broader, with four external teeth stronger and more acute than in male; protarsi with 5th segment slightly longer than that of male.

Type series. Holotype: ♂, Ban Khoun Ngeun (N18° 07′, E104° 29′, 250m alt.), Khammouen prov., Laos, 4–16. X.~ 25–30. XI, 2000, E. JENDEK & P. PACHOLATKO leg. Paratypes: 4♀♀, the same data as the holotype.

Type depository. The holotype will be deposited in the National Museum of Nature and Science, Tokyo (NSMT).

Distribution. Laos.

Etymology. This species is named after Mr. Keiichi TSUKAMOTO, a specialist of coprophagus scarabaeid beetles in Japan.

Notes. The present new species can be distinguished from *Cyobius wallacei* SHARP and *C. cheyi* OCHI, KON et KASHIZAKI by the following characteristics: 1) The 1st to 5th segments of meso- and metatarsi are successively decreasing in width apically, whereas in *C. wallacei* and *C. cheyi*, they are not; 2) the body is much smaller; 3) the head is entirely simply formed, without ornaments, whereas in *C. wallacei* and *C. cheyi*, with carinate frontoclypeal suture; 4) the pronotum is densely and rather coarsely punctate, whereas in *C. wallacei* and *C. cheyi*, it is sparsely and finely punctate in the middle; 5) the pronotum is simply formed in both sexes, whereas in *C. wallacei* and *C. cheyi*, it has a pair of tubercles on disc; 6) parameres of aedeagus are slender in lateral view, whereas in *C. wallacei* and *C. cheyi*, they are distinctly short.

As pointed out by OCHI *et al.* (2006), the genus *Cyobius* resembles the genus *Larhodius* BALTHASAR, 1963. The present new species also resembles closely *L. hashimi* MATSUMOTO et UTSUNOMIYA, but can be distinguished from the latter by the following characteristics: 1) the head is entirely simply formed without ornaments, whereas in *L. hashimi*, it is not entirely simply formed, with the frontoclypeal suture vaguely and transversely raised along the suture at the middle; 2) the head is rather large and moderately long, whereas in *L. hashimi*, it is clearly small and short; 3) the pronotum is distinctly covered with shallow and rather small punctures at the basal median portion, whereas in *L. hashimi*, it is fairly sparsely covered with very fine punctures at the basal median portion; 4) the body is clearly larger, about 3.8–4.1 mm in length (n = 5), whereas in *L. hashimi*, it is distinctly smaller, about 3.0–3.7 mm in length; 5) body is more broadly oval in outline, whereas in *L. hashimi*, it is narrower.

The holotype has the protibia with four teeth markedly rounded. We defer our conclusion concerning whether this character state is species-specific or not in the male, until additional male specimens will be available.

Specimens compared. Cyobius cheyi OCHI, KON & KASHIZAKI: ♂, Gomanton, near Sandakan, Sabah State, Borneo, 21–23. II. 2005, A. KASHIZAKI leg (holotype). *Cyobius wallacei* SHARP: 1♀, Mt. Bawang, Kalimantan, Indonesia, VII. 1991; 1♀, Quop, W. Sarawak, 18. VI. 1914, G. E. BRYANT, labeled with "*Cyobius wallacei* SHARP, BOUCOMONT det., 1925" and "*Cyobius wallacei* SHARP, det., J. KRIKKEN 1970". *Larhodius hashimi* MASUMOTO *et* UTSUNOMIYA: 1♂, Ulu Gombak, Selangor, Malaysia, 21. V–3. VI. 2003, M. MARUYAMA leg (paratype).

Ackowledgements

The authors wish to express their hearty thanks to Mr. Keiichi TSUKAMOTO, Kyoto City, for his kind help in materials. We are also indebted to Dr. Kimio MASUMOTO, Otsuma Women's University and Dr. Munetoshi MARUYAMA, Kyushu University, for giving us the opprotunity to examine invaluable specimens.

要　　約

越智 輝雄・近　雅博・河原 正和：*Cyobius* 属の1新種. —— これまで *Cyobius* 属の種はスンダランドから5種知られるのみであったが，このたびラオスから本属の種が採集され，調査したところ新種であることが判明し，ここに *Cyobius tsukamotoi* sp. nov. と命名した.

References

KRIKKEN J. and J. HUIJBREGTS, 2007. Taxonomic diversity of the genus *Ochicanthon* in Sunda Island (Coleoptera: Scarabaeidae: Scarabaeinae). *Tijdschrift voor Entomologie*, **150**: 421–479.

MASUMOTO, K. and Y. UTSUNOMIYA, 2003. Two new *Larhodius* (Coleoptera, Scarabaeidae, Dichotomini [sic] from the Malay Peninsula. *Elytra, Tokyo*, **31**: 379–383.

OCHI, T., M. KON and A. KASHIZAKI, 2006. A new species of the genus *Cyobius* (Coleoptera, Scarabaeidae, Onthophagini) from Borneo. *Elytra, Tokyo*, **34**: 145–152.

SHARP D., 1875 - IV. Description of some new genera and species of Scarabaeidae from tropical Asia and Malaysia, Part I – *Coleopterologische Hefte*, München, **13**: 33–54.

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Ent. Rev. Japan, **63** (2): 181–189, December 25, 2008

Notes on the Coprophagous Scarabaeid Beetles (Coleoptera, Scarabaeidae) from Southeast Asia (XVIII)

Two New Species of *Macropanelus* from Sumatra

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Abstract Two new species of the genus *Macropanelus* are described from Sumatra under the names of *M. karasuyamai* sp. nov. and *M. fujitai* sp. nov. The definition of the genus *Macropanelus* is redefined, and a key to the species of the genus is provided.

OCHI *et al.* (1998) established the genus *Macropanelus* in the tribe Canthonini for the species *M. sumatrensis* OCHI, KON et ARAYA described from West Sumatra. The holotype of *M. sumatrensis,* the only known specimen of the genus, was collected from a gallery of the passalid beetle *Aceraius grandis* (BURMEISTER) excavated into a fallen tree on the forest floor near Padang (ARAYA & KON, personal observation).

Recently, we have had an opportunity to examine a long series of scarabaeid specimens collected from the various localities in Sumatra through the courtesy of Mr. Kunio KARASUYAMA, and we found two strange species belonging to the tribe Canthonini in the collection. These two species were all collected from rotten logs in the mountainous regions (KARASUYAMA, personal communication). After close examinations, we concluded that the both are new species of the genus *Macropanelus*, that will be described in this paper. In addition, we redefine the genus *Macropanelus* based on the results of present examinations, because the original definition of this genus by OCHI *et al.* (1998) was based solely on a single female specimen of *M. sumatrensis* and so unavoidably limited. We also provide a key to the species of *Macropanelus*.

All the holotypes designated herein will be deposited in the collection of the National Museum of Nature and Science, Tokyo.

Tribe Canthonini

Genus *Macropanelus* OCHI, KON et ARAYA

Macropanelus OCHI, KON & ARAYA, 1998, Ent. Rev. Japan, Osaka, 52 (2): 111.
Type species: *Macropanelus sumatrensis* OCHI, KON et ARAYA

Length: about 3.9–5.0 mm.

Body short-oval to oblong-oval, strongly convex dorsally; dorsal surface usually shining and smooth, almost glabrous at a glance, though sparsely clothed with very fine inconspicuous hairs; ventral side also shining and smooth, almost glabrous except for hairy mouth organs and so on; meso- and metatibiae densely clothed with yellwoish hairs on either apical portion and meso- and metatarsi densely clothed with yellowish hairs. Color usually unicolor black.

Head flattened dorsally; clypeus strongly produced forward, with apex deeply emarginate in the middle, and dentate on either side of the emargination; genal sutures finely defined, not carinate; frontoclypeal suture entirely effaced; genae more or less produced laterad; surface simply punctate. Mentum somewhat transverse, quadrate or trapezoidal in outline; labial palpi relatively large, clearly larger than those of *Ochicanthon*, and slightly shorter than the length of mentum, with each segment rather flattened. Antennae with nine segments, antennal club composed of three segments.

Pronotum simply formed as usual; anterior margin emarginate; lateral margins parallel-sided in basal three-fourths in dorsal view, obtusely angled at apical fourth and then strongly narrowing toward anterior angles; anterior angles distinct, often right-angled; posterior angles distinct, obtusely angled; basal margin gently rounded, usually unbordered; disc more or less depressed on either side near lateral margin. Pronotum and elytra with lateral margins continuous, not constricted.

Elytra strongly and evenly convex, nearly as wide as the prothoracic width at base, with lateral margins strongly rounded, and with seven striae and one lateral costa near epipleural margin; the lateral costa clearly separated from pseudepipleural margin at base, then gradually approaching mutually toward apex, and joined near the middle; humeral callus indistinct; epipleura distinctly narrow; pseudepipleura wide, without striae.

Pygidium carinate at base, clearly transverse. Prothorax noticeably excavated in front of the ventral side, the excavation usually fairly deep and broad. Mesosternum distinctly broad, slightly raised than metasternum. Metasternum large and obviously long, about 2 times as long as abdomen; metasternal shield distinct, with anterior margin clearly defined; lateral margins finely defined. surface smooth, almost impunctate or finely punctate in the middle alike in that of *Panelus*. Abdomen clearly short. Protibiae slightly broad, gradually dilated from base to apex, weakly incurved, with three small external teeth, the remaining external margin smooth, not serrate; apex deeply incised in the middle and forked alike in *Panelus*; protarsi very short, though robust and rather flattened. Mesotibiae short, rather broad, flattened dorsally and weakly incurved. Metatibiae slender, weakly incurved; inner margin usually denticulate, the denticles somewhat fine; inner distal end more or less modified, sometimes produced laterad as a tooth. Meso- and metatarsi distinctly short, strongly flattened, with 1st to 4th segments almost the same in size at a glance though slightly decreasing its size apicad.

Aedeagus with parameres clearly asymmetrical.

Sexual dimorphism very slight and not well developed except for metatibiae of which the inner margin is often modified distally in both sexes.

Notes. In 1998, OCHI, KON & ARAYA defined the genus on two characters, the prothoacic excavation on the ventral side and the epipleuron of elytra, but new definition is given above based on three species.

This genus contains three species and is clearly distinguished from the related genera in Southeast Asia by the following characters combined: 1) protibiae bear three small external teeth, the remaininig external margin is smooth and not serrate; 2) protibiae are deeply notched and forked at apex alike in *Panelus*; 3) inner margin of metatibiae is finely denticulate throughout; 4) meso- and metatarsi are almost of the same length, only slightly decreasing its size apicad alike in *Panelus*; 5) elytra bear a longitudinal costa which is clearly separated from pseudepipleural margin at base, then gradually approaching mutually toward apex, and joined near the middle.

Distribution. Sumatra.

Macropanelus karasuyamai sp. nov.

(Figs. 1, 3–9, 18)

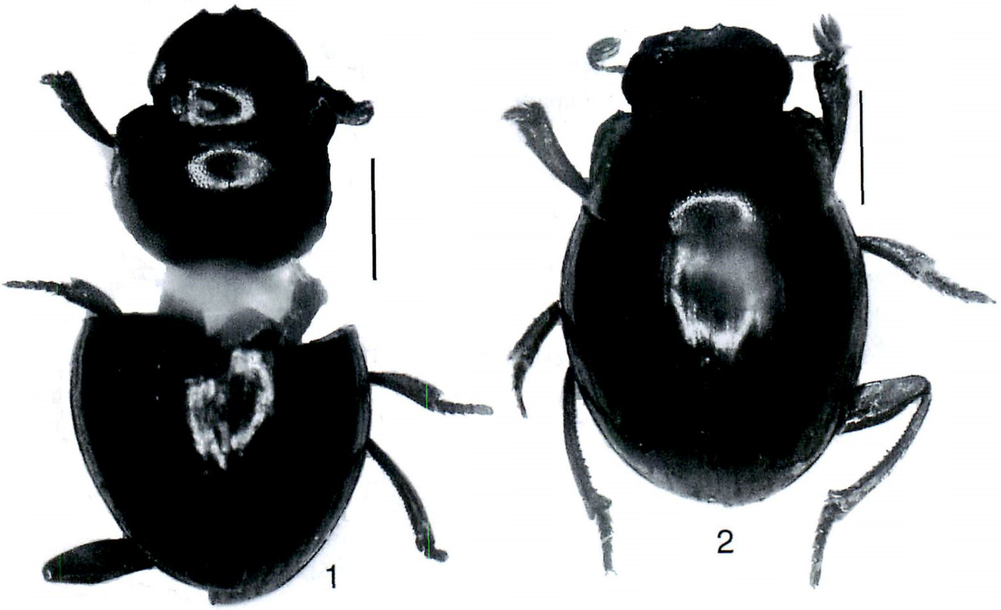
Length: 3.9–4.1 mm; width; 2.3–2.4 mm (n = 4).

Body small-sized in general, oval to oblong-oval, strongly convex dorsally; dorsal side fairly smooth and strongly shining, sparsely clothed with very fine recumbent inconspicuous hairs; ventral side strongly shining, almost glabrous at a glance except for distinctly hairy mouth parts and sparsely clothed with very fine and inconspicuous hairs on lateral portions of metasternam and abdominal sternites. Color uniformly black, with anterior marginal portion of head, anterior angles of pronotum and legs somewhat reddish.

Male. Head transverse, about 1.3 times as wide as long (n = 1); clypeus strongly produced forward, deeply notched in the middle, with a reflexed sharp tooth on either side of the notch; genal sutures finely defined; frontoclypeal suture completely and widely effaced in the middle, finely and briefly impressed on either side; genae produced laterad, with genal corner obtusely angled, rounded apically; surface scarcely micro-granulose and weakly shining, sparsely and finely punctate in the middle, the punctures becoming denser and coarser laterad and also posteriad.

Pronotum evenly and moderately convex, about 1.6 times as wide as long (n=1); anterior margin emarginate, with marginal line finely bordered laterad and unbordered in the middle; lateral margins almost straight in basal three-fourths from dorsal view, and obtusely angled at apical fourth, then abruptly narrowed toward each apex, with marginal line finely bordered; anterior angles distinct, right-angled; posterior angles distinct, rather obtuse; basal margin weakly rounded, unbordered; surface densely covered with rather small, but distinct, round punctures except for two or three narrow impunctate portions along midline, the punctures becoming elongate or partly converse U-shaped or somewhat crescent-shaped at the middle of base.

Elytra about 1.1 times as wide as long (n=1); lateral margins strongly rounded; disc evenly and strongly convex dorsally; striae shallowly and rather finely grooved, with strial punctures distinctly close, shallow though clearly defined, slightly notching either margin of intervals; intervals almost flat, sparsely and finely punctate.



Figs. 1–2. Habitus of *Macropanelus* spp., dorsal view.——1. *M. karasuyamai* sp. nov., holotype, male; 2: *M. fujitai* sp. nov., holotype, male. All scales 1mm.

Pygidium gently convex, obviously transverse, densely covered with strong, round punctures. Prothorax deeply and widely excavated in front of the ventral side. Mesosternum smooth, almost impunctate at a glance though sparsely and very finely punctate, the punctures becoming coarser laterad along basal margin. Metasternum elongate; metasternal shield smooth, scarcely noticeablly punctate, with anterior margin arcuate, rounded at apex, lateral margins only slightly sinuate; lateral portions densely covered with shallow coarse punctures, which partly become conversely U-shaped. Abdomen clearly short, about half length of metasternum; each sternite transversely micro-strigose; 2nd to 5th sternites arranged with a single transverse row of round small punctures, which slightly increase in number laterad; last sternite densely punctate. Profemora with anterior edge simply formed. Metafemora with posterior edge slightly toothed near base. Protibiae armed with three weak external teeth, 1st tooth sharp, 2nd small and indistinct, 3rd clearly larger than 2nd and obtuse. Mesotibiae short and rather broad, weakly incurved and strongly broadened apicad, about 0.8 mm in length (n = 1); mesotarsi flattened, about 0.5 mm in total length (n = 1). Metatibiae fairly slender, gently incurved, about 1.0 mm in length (n = 1); inner margin finely denticulate, with about 20 fairly small denticles; inner distal end briefly and only slightly protrudent laterad, though not produced as a tooth; metatarsi flattened, 0.6 mm in length (n = 1).

Aedeagus relatively large, rather elongate. Phallobase slightly twisted, about 1.0 mm in length from lateral view (n = 1), about 0.4 mm in apical width (n = 1). Parameres distinctly asymmetrical from dorsal view, about 0.4 mm in length from lateral view (n = 1); right paramere slightly longer than the left, about 0.4 mm in length (n = 1), with apex sharply pointed in lateral view and hooked laterad in dorsal view; left paramere short, about 0.3 mm in length (n = 1), with apx simple-formed, rather rounded and in lateral view.

Female. Protibiae with three external teeth slightly stronger than in male. Metatibiae with inner margin more roughly denticulate throughout; inner distal end simple-formed, pointed apicad.

Type series. Holotype: ♂, Mt. Seulawah (650-700 m alt.), Acheh, Sumatra, Indonesia, 1998. K. FUJITA leg. Paratypes: 2♀♀, the same data as the holotype; 1♂, Sibolangit (700–1,000 m alt.), N. Sumatra, 8–18. XII. 1998. K. FUJITA leg.

Distribution. Sumatra, Indonesia.

Etymology. This new species is named in honor of Mr. Kunio KARASUYAMA.

Notes. The present new species is closely similar to *M. sumatrensis* OCHI, KON & ARAYA from West Sumatra, but is clearly distinguished from the latter by the following characters: 1) pronotum is more strongly punctate with impunctate or very finely punctate antero-median portion very narrow, whereas in *M. sumatrensis*, it is less strongly punctate with impunctate or very finely punctate antero-median portion clearly wider; 2) inner margin of metatibia is finely denticulate, whereas in *M. sumatrensis*, it is slightly but more roughly denticulate; 3) body is clearly smaller; 4) gena of head is less strongly produced laterad, whereas in *M. sumatrensis*, it is more strongly produced laterad; 5) clypeal two teeth of head are strongly produced forward and sharply pointed, whereas in *M. sumatrensis*, it is scarcely produced forward and not sharp; 6) in female, inner distal end of metatibia is simple-formed and not sharply produced laterad, whereas in female of *M. sumatrensis*, it is strongly produced as a sharp tooth.

Macropanelus fujitai sp. nov.

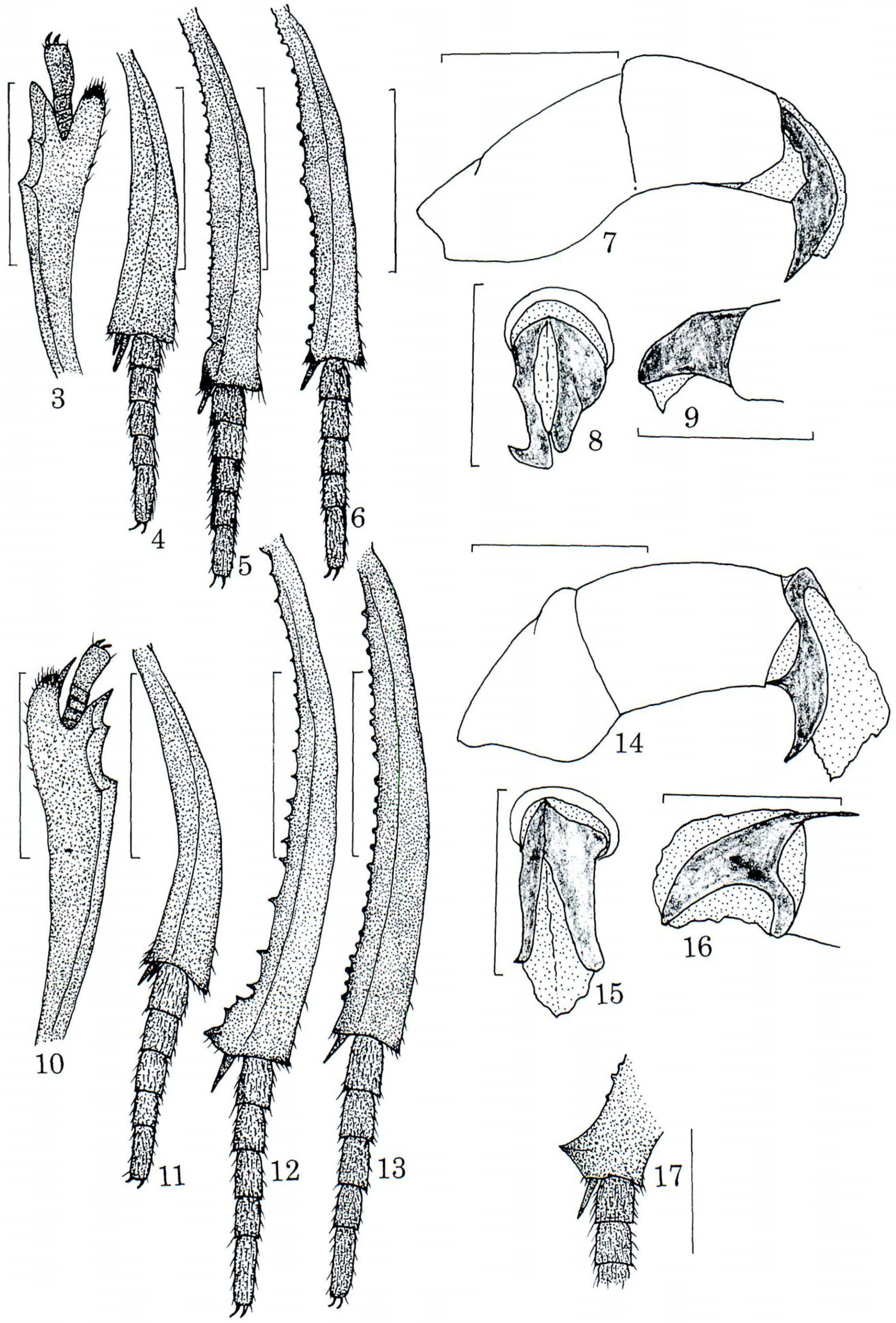
(Figs. 2, 10–16, 19)

Length: 4.8–5.0 mm; width; 2.6–2.8 mm (n = 2).

Body generally moderate-sized, short oval, strongly convex above; dorsal side very smooth and strongly shining, sparsely clothed with fine recumbent inconspicuous hairs; ventral side almost glabrous at a glance except for distinctly hairy mouth parts and lateral portions of metasternam and abdominal sternites which are sparsely clothed with fine inconspicuous hairs. Color uniformly black, with anterior marginal portion of head, anterior angles of pronotum and legs somewhat reddish.

Male. Head transverse, about 1.3 times as wide as long (n = 1); clypeus strongly produced forward, deeply notched in the middle, with a reflexed tooth on either side of the notch, the tooth somewhat obtuse at apex; genal sutures only slightly notched at either margin, fairly finely defined, extending from margin to near the middle of head; frontoclypeal suture completely and widely effaced in the middle, finely and distinctly impressed on either side; genae produced laterad, with genal corner obtusely angled, rounded apically, margin very slightly toothed at anteriormost portion; surface weakly micro-granulose, sparsely and finely punctate in the middle, the punctures becoming denser and coarser laterad and also posteriad.

Pronotum evenly and rather strongly convex, distinctly wider than the preceding species, about 1.8 times as wide as long (n = 1); anterior margin emarginate, with marginal line bordered laterad though the line effaced in the middle; lateral margins almost straight in basal three-fourths from dorsal view, and obtusely angled at apical fourth, then strongly narrowed toward each apex, with marginal line finely bordered; anterior angles distinct, rectangular; posterior angles distinct, rather obtuse; basal margin weakly rounded, unbordered; surface rather densely covered with small, distinct and round punctures except for two or three narrow impunctate portions along midline, the punctures becoming elongate or partly converse U-shaped or rather cres-



Figs. 3–17. *Macropanelus* spp. —— 3-9, *M. karasuyamai* sp. nov.; 3–5 & 7–9, male; 6, female. 3, left protibia, dorsal view; 4, right mesotibia, dorsal view; 5, right metatibia, dorsal view; 6: ditto, dorsal view; 7, aedeagus, right lateral view; 8, ditto, dorsal view; 9, left paramere, left lateral view; 10–16, *M. fujitai* sp. nov.; 10–12 & 14–16, male; 13, female. 10, right protibia, dorsal view; 11, right mesotibia, dorsal view; 12, right metatibia, dorsal view; 13, ditto, dorsal view; 14, aedeagus, right lateral view; 15, ditto, dorsal view; 16, left paramere, left lateral view; 17, *M. sumatrensis* Ochi, Kon & Araya, apex of metatibia . All scales 0.5 mm.

cent-shaped at the middle of base.

Elytra about 1.1 times as wide as long (n=1); lateral margins strongly and broadly rounded; disc evenly and strongly convex above; striae shallowly and somewhat finely grooved, with strial punctures fairly close, shallow, partly not distinctly defined and slightly notching either margin of intervals; intervals flat, sparsely and finely punctate.

Pygidium clearly transverse, slightly convex near apex, distinctly punctate, the punctures dense at apex and sparse at base. Prothorax fairly deeply and widely excavated in front of the ventral side. Mesosternum smooth, sparsely and very finely punctate, the punctures becoming coarser laterad along basal suture. Metasternum elongate; metasternal shield smooth, scarcely noticeablly punctate, with anterior margin arcuate and rounded at apex, lateral margins clearly sinuate; lateral portions densely covered with shallow coarse punctures, which partly become converse U-shaped. Abdomen fairly short, about half length of metasternum; each sternite transversely micro-strigose; 2nd to 5th sternites arranged with a single transverse row of round small punctures, which increase in number laterad; last sternite densely punctate. Protibiae with three weak external teeth, 1st tooth sharp, 2nd small, 3rd slightly larger than 2nd, but not so sharp. Mesotibiae short and broad, weakly incurved and strongly broadened apicad, about 0.9 mm in length (n=1); mesotarsi flattened, about 0.6 mm in total length (n=1). Metatibiae fairly slender, gently incurved, about 1.3 mm in length (n=1); inner margin finely denticulate, with about 20 fairly small denticles; the denticles in apical half of inner margin fairly sparse and sharp; inner distal end clearly produced laterad as a sharp tooth; metatarsi flattened, 0.7 mm in total length (n=1).

Aedeagus rather large. Phallobase somewhat robust, about 1.0 mm in length from lateral view (n=1), about 0.4 mm in apical width (n=1). Parameres clearly asymmetrical from dorsal view, about 0.4 mm in length in lateral view (n=1); right paramere clearly narrower than the left, about 0.4 mm in length (n=1), with apex sharply pointed in lateral view and only slightly produced laterad in dorsal view; left paramere broad, about 0.4 mm in length (n=1), strongly curved in lateral view.

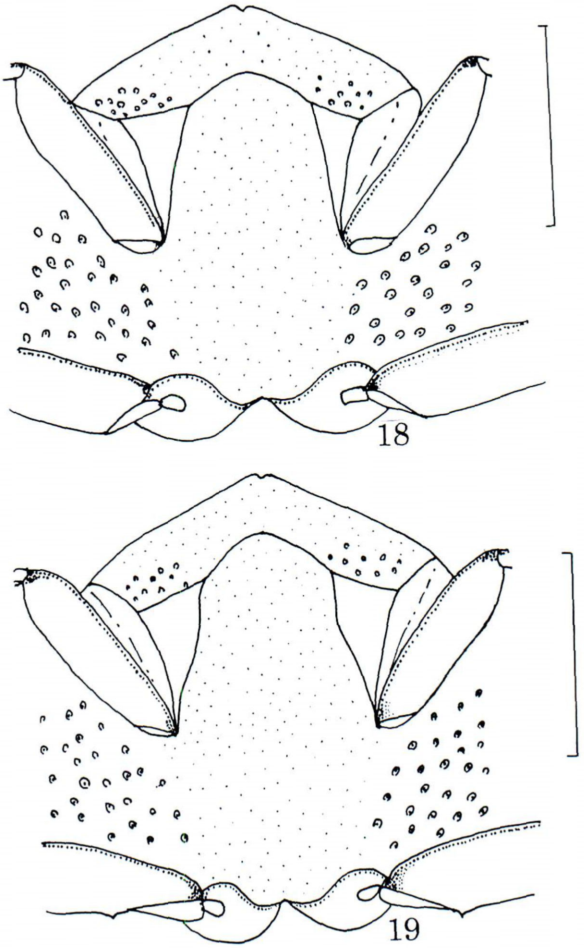
Female. Head with clypeal two teeth more sharply produced; surface more distinctly shining and more strongly punctate. Pronotum more densely punctate than in male. Metatibiae with inner margin more closely denticulate, each denticle shorter and more dsitinctly rounded; inner distal end ordinary, not produced.

Type series. Holotype: ♂, Mt. Bubun (800 m alt.), 50 km from Lake Toba, North Sumatra, 1998. K. FUJITA leg. Paratype: 1♀, same data as holotype.

Distribution. Sumatra, Indonesia.

Etymology. The present specific name is dedicated to Mr. Kazuhisa FUJITA, who collected the type specimens.

Notes. The present new species is closely related to *M. sumatrensis* from West Sumatra, but is clearly distinguished from the latter by the following characters: 1) pronotum is more strongly punctate with impunctate or very finely punctate antero-median portion very narrow, whereas in *M. sumatrensis*, it is less strongly punctate with impunctate or very finely punctate antero-median portion clearly wider; 2) lateral margin of metasternal shield is clearly sinuate, whereas in *M. sumatrensis*, it is slightly sinuate; 3) in female, inner distal end of metatibia is ordinary, not sharply produced laterad, whereas in *M. sumatrensis*, it is sharply produced laterad; 4) head is more distinctly or strongly punctate than in *M. sumatrensis*.



Figs. 18–19. Thoraces of *Macropanelus* spp., ventral view. ——18, *M. karasuyamai* sp. nov.; 19, *M. fujitai* sp. nov. All scales 1mm.

Macropanelus sumatrensis OCHI, KON & ARAYA

(Fig. 17)

Macropanelus sumatrensis OCHI, KON & ARAYA, 1998, *Ent. Rev. Japan*, Osaka, 52 (2): 111.

Length: 5.0 mm.

Type specimen examined. Holotype, 1♀, Padang, West Sumatra, Indonesia, 26. III. 1997.

Distribution. Sumatra, Indonesia.

Notes. OCHI, KON & ARAYA (1998, p. 112) described this species from Padang, West Sumatra. At that time, they recorded erroneously the body length of this species, 5.5 mm, based on the single female specimen. We correct it from 5.5 to 5.0 mm herein.

Key to the species of the Genus *Macropanelus*

1(2) Pronotum with impunctate or very finely punctate antero-median area very wide, which is extending from anterior margin to the middle. ♀: metatibiae strongly incurved near apex, with inner distal end strongly produced as a sharp tooth. ♂: unknown. 5.0 mm. ………………… ……………………………………………………………………… *M. sumatrensis* OCHI, KON et ARAYA

2(1) Pronotum with impunctate or very finely punctate antero-median area very narrow, which is mostly barely noticeable. ♂♀: metatibiae weakly incurved near apex, with inner distal end almost simply formed or strongly produced as a tooth.

3(4) Metasternal shield with lateral margin only slightly sinuate. Metatibiae with inner distal end ordinary, not strongly produced as a tooth in both sexes. Aedeagus with distinctly asymmetrical parameres; right paramere sharply pointed at apex from lateral view and distinctly hooked laterad from dorsal view; left paramere short with apx simply formed, rather rounded from lateral view. Small species, about 3.9–4.1 mm. ………………………………… ……………………………………………………………………………………… *M. karasuyamai* sp. nov.

4(3) Metasternal shield with lateral margin clearly sinuate. Metatibiae with inner distal end clearly produced laterad as a tooth in male, ordinary in female. Aedeagus with distinctly asymmetrical parameres; right paramere sharply pointed at apex from lateral view and only slightly produced laterad from dorsal view; left paramere broad, strongly curved from lateralview. Large species, 4.8–5.0 mm. …………………………………………… *M. fujitai* sp. nov.

Acknowledgments

We wish to express our cordial thanks to Mr. Kunio KARASUYAMA, Nagasaki Prefecture for his kind help in materials.

要　約

越智 輝雄・近　雅博・河原 正和：*Macropanelus* 属 2 種の新種記載と属の再記載. —— *Macropanelus* 属は 1 属 1 種でスマトラから 1998 年に記載されたが，今回，さらにスマトラから2新種が発見された．ここに *M. karasuyamai* sp. nov. 及び *M. fujitai* sp. nov. と命名し，併せて属についても新たな知見が加わったので再記載し，検索表も加えた．

References

KRIKKEN J. and J. HUIJBREGTS, 2007. Taxonomic diversity of the genus *Ochicanthon* in Sunda Island (Coleoptera: Scarabaeidae: Scarabaeinae). *Tijdschrift voor Entomologie*, **150**: 421–479.

OCHI T., M. KON & K. ARAYA, 1998. Notes on the Coprophagous Scrarab-Beetles (Coleoptera, Scarabaeidae) from South-East Asia (1) A new genus and species of the tribe Canthonini from Sumatra. *The Entomological Review of Japan, Osaka*, **52**: 111–115.

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Ent. Rev.Japan, **63** (2): 191–199, December 25, 2008

Notes on the Coprophagous Scarabaeid Beetles (Coleoptera: Scarabaeidae) from Southeast Asia (XIX)

Three New Taxa of *Synapsis* from Southeast Asia

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Abstract Two new species of the genus *Synapsis* are described: *S. roslihashimi* sp. nov. from the Malay Peninsula and *S. punctatus* sp. nov. from Myanmar. A new subspecies of *S. cambeforti* is described from Poring, Sabah, Malaysia, under the name of *S. cambeforti poringensis* ssp. nov.

Up to the present, 22 species of the genus *Synapsis* have been known from the Palearctic and Oriental Regions (Balthasar, 1963; Krajcik, 2006; Ochi & Kon, 2007).

Recently, we have examined specimens of a *Synapsis* species collected by Dr. Munetoshi Maruyama from the Malay Peninsula, which is similar to *S. birmanicus* from Myanmar but distinct from the latter in some external characters. Further, in the course of our scrutiny on *Synapsis* specimens in our hands,we found another species from Myanmar seemingly similar to *S. birmanicus* but distinct from the latter. After close examinations and comparisons, we concluded that the both species are new to science, as described in the followings.

In addition, we describe a new subspecies of *Synapsis cambeforti* from Poring, Sabah, Malaysia. We found that the populations from the lower mountainous areas (around 1,000 m in altitude) in Sabah are somewhat different from the nominotypical subspecies from Brunei in some external characters.

Synapsis roslihashimi sp. nov.

(Figs. 1, 3–5)

Synapsis birmanicus: Krikken, 1987, *Zool. Medel.*, 61 (1987): 321 (partim).

Length: 21.8–26.0 mm; width; 11.7–13.8 mm (n=22).

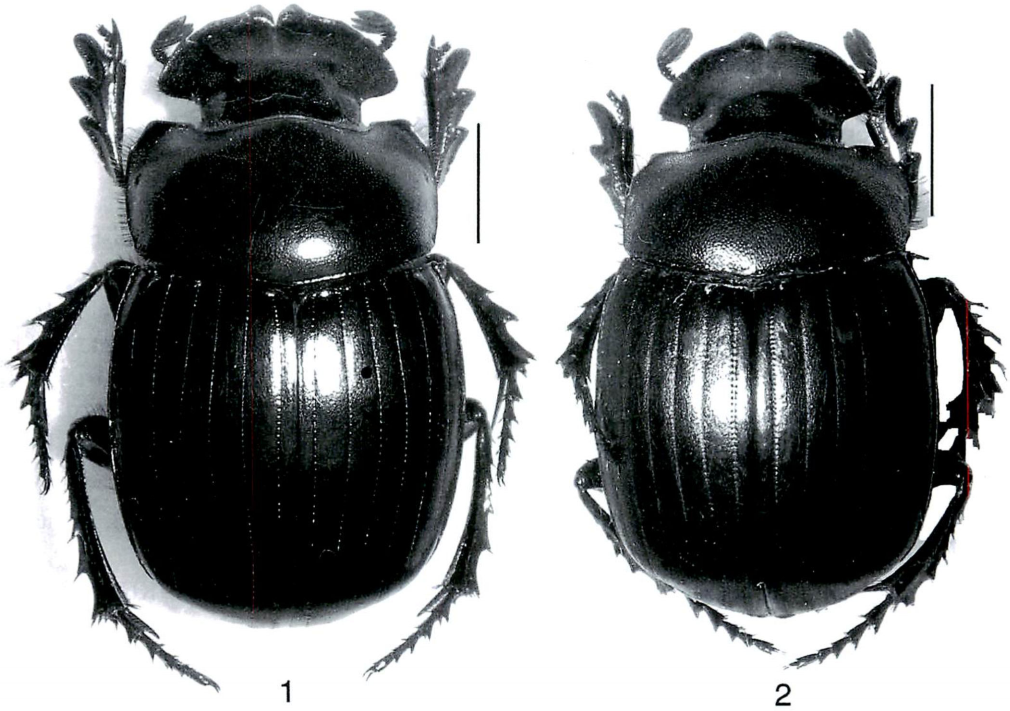
Body rather small-sized in general, broadly oval, not so strongly convex above; dorsal side rather smooth and shining, almost glabrous except for anterior margin of head which is sparsely clothed with reflexed short hairs; ventral surface shining with abdomen subopaque, partly clothed with brown hairs; metasternum and abdominal sternites glabrous. Color uniformly black, with mouth parts and palpi dark brown to reddish brown; antennae with antennal foot-stalks reddish brown, club segments dark reddish brown.

Male. Head widely transverse, somewhat semicircular in front in outline; clypeus more deeply incised in the middle than in *S. birmanicus*, with either side of the incision distinctly reflexed and lobed, the lobe more strongly produced than in *S. birmanicus*; clypeal margin reflexed and clearly broadly bordered, sinuous on each side of the lobes; genal sutures finely and strongly defined, extending to near mid-eye level on frons; each gena strongly produced laterad as well as in *S. birmanicus*, with genal corner slightly acute than right angle; genal margin almost straight or gently rounded in front and sinuate behind; ocular canthus occupying half length of eye as well as in *S. birmanicus*; frons weakly raised at the middle though not developed as a distinct swelling; vertex shallowly and transversely depressed at the middle; surface shining, with clypeus and frons rather sparsely and transversely punctate or sculptured in front, the punctures becoming denser posteriad, genae transversely sculptured along anterior margin, granulate in the middle and smooth near eye, vertex almost impunctate in the middle, and densely, strongly punctate laterad, the punctures somewhat transverse.

Pronotum moderately convex, clearly transverse, about 1.7–1.8 times as wide as long (n = 3), with a fine and slightly raised midline; anterior margin weakly bi-sinuate, broadly bordered, with either lateral portion simply formed, almost straight; lateral margins straight or gently rounded from base to near anterior angle, with marginal line fine, though the line sometimes distinctly and briefly interrupted before posterior angle; anterior angles obliquely and briefly truncate or sinuous, with antero-lateral portion slightly produced and rounded apically, post-lateral portion distinctly rounded, but not protrudent laterad; posterior angles distinctly obtuse or sometimes effaced (owing to the occasional interruption of marginal line); base obtusely angled at the middle, finely bordered in the middle, unbordered or imperfectly so laterad; disc entirely simple; the lateral carina joined with lateral margin in front and behind; surface shining except for micro-granulose narrow portion along lateral margin, sparsely to rather sparsely covered with strong punctures in middle, the punctures becoming larger or partly somewhat crescent-shaped toward side.

Elytra about 1.0–1.1 times as wide as long (n = 3); disc moderately convex, each with ten striae, 1st to 7th striae extending from base to near apex between sutural margin and lateral costa, 8th to 10th also extending base to near apex between lateral costa and lateral margin, 3rd and 6th, 4th and 5th clearly joined at apex, 1st, 2nd and 10th, 7th and 8th barely joined at apex, 9th isolated; all striae finely and distinctly grooved, with fine ridges on both sides; strial punctures rather close, strong and obviously defined, slightly but distinctly notching either margin of intervals; intervals very slightly convex or almost flat, weakly shining, irregularly and longitudinally micro-wrinkled or microsculptured.

Pygidium weakly convex, shining in the middle and somewhat opaque laterally, transversely and closely wrinkled, rather sparsely covered with transverse punctures. Prothorax with anterior angles broadly and very deeply excavated on the ventral side, the excavation densely



Figs. 1–2. Habitus of *Synapsis* spp., dorsal view, scale 5 mm.——1. *S. roslihashimi* sp. nov., holotype, male; 2. *S. punctatus* sp. nov., holotype, male.

fringed with long yellowish hairs alike in *S. birmanicus*.

Metasternum longitudinally grooved along midline in basal half, and also shallowly excavated on either side of the groove at base; metasternal shield shining basally and micro-granulose apically, glabrous, sparsely covered with fine punctures at base, the punctures becoming granulate toward apex; lateral portions weakly micro-granulose, glabrous, and rather sparsely covered with short scratch-like sculptures which are often seemingly obtusely granulate in oblique aspect. Abdomen with 2nd to 5th sternites subopaque, sparsely covered with fine punctures in the middle, the punctures becoming larger and asperate and also increasing in number laterad; last sternite slightly but clearly bent ventrally from lateral view. Metafemora each with ventral side bearing a small blunt tooth at basal 1/3 on the posterior edge; medial irregular transverse carina occupying apical half, though partly interrupted, and intermittently clothed with long reddish hairs; surface sparsely and finely punctate on anterior portion, and very densely and coarsely punctate on posterior portion. Protibiae broad, with strong three external teeth; 1st tooth broad and largest, 2nd slightly smaller than 1st, 3rd clearly smaller; terminal spur sharp and strong, curved outward. Mesotibiae rather short, gradually dilaterd from base to each apex, with 4 to 5 external teeth (including apical tooth); the penultimate tooth the largest and placed at about basal 2/3; dorso-external side without distinct transverse carina. Metatibiae elongate, strongly dilated toward each apex; inner distal end simply edged; lateral margin with 7 to 8 external teeth (including apical tooth), the penultimate tooth the largest, placed at apical 2/5; dorsal surface sparsely arranged with a longitudinal row of long hairs in whole length.

Aedeagus moderate-sized, about 5.6 mm in total length. Phallobase about 3.2 mm in length in lateral view, about 1.4 mm in apical width in dorsal view, with a strongly raised and transverse swelling on the middle of basal suture dorsally, whose anterior portion is distinctly carinate. Parameres about 2.4 mm in length in lateral view, with dorsal lobes slightly raised above in lateral view, dorsal membrane distinctly narrow; ventral side with membranes distinct, without a prominence at base.

Female. Sexual dimorphism very slight. Abdomen with last sternite almost the same length as in male, but almost continuous with the preceding five segments and not distinctly bent ventrally in lateral view.

Type series. Holotype: ♂, Ulu Gombak (220 m alt.), Selangor, West Malaysia, 7–17. IV. 2007, M. MARUYAMA leg. Paratypes: 1♀, the same data as the holotype; 1♂, ditto, 21. V–3. VI. 2003; 4♂♂, 5♀♀, ditto, Field Study Center (250 m alt.), 2–18. III. 2004 (FIT); 1♂1♀, ditto, 15. IV. 2007; 1♀, Bishop Trail (1,200 m alt.), Bukit Frazer, Pahng, Malaysia, 9–13. VI. 2006, M. MARUYAMA & Y. KATAYAMA leg; 1♂1♀, Rawang, Malaysia, 1. I. 2008, M. KON leg; 2♂♂3♀♀, Cameron Highlandas, Malaysia, 1981.

Further specimens examined. 3♂♂, 3♀♀, Mt. Singgalang (500–1000 m alt.), Annai Valley, West Sumatra, IV. 2005.

Type depository. The holotype will be deposited in the Kyushu University Museum (KUM).

Distribution. Malay Peninsula and Sumatra.

Etymology. This species is named after Dr. Rosli HASHIM, University Malaya.

Notes. The present new species is somewhat similar to *Synapsis birmanicus* GILLET from Myanmar, but is clearly distinguished from the latter by the following characters: 1) strial punctures of elytra are strong and obviously defined, distinctly notching either margin of intervals, whereas in *S. birmanicus*, those are very weak and indefinite, scarecely notching either margin of intervals; 2) dorsal surface is almost shining, whereas in *S. birmanicus*, it is distinctly opaque; 3) each gena of head is less strongly produced laterad, with genal corner almost right-angled, whereas in *S. birmanicus*, it is distinctly and strongly produced laterad, with its corner slightly more acute than right-angle; 4) body is slightly larger than in *S. birmanicus*. The present new species appears to be specifically identical with the species from the Malay Peninsula illustrated as *S. birmanicus* by KRIKKEN (1987).

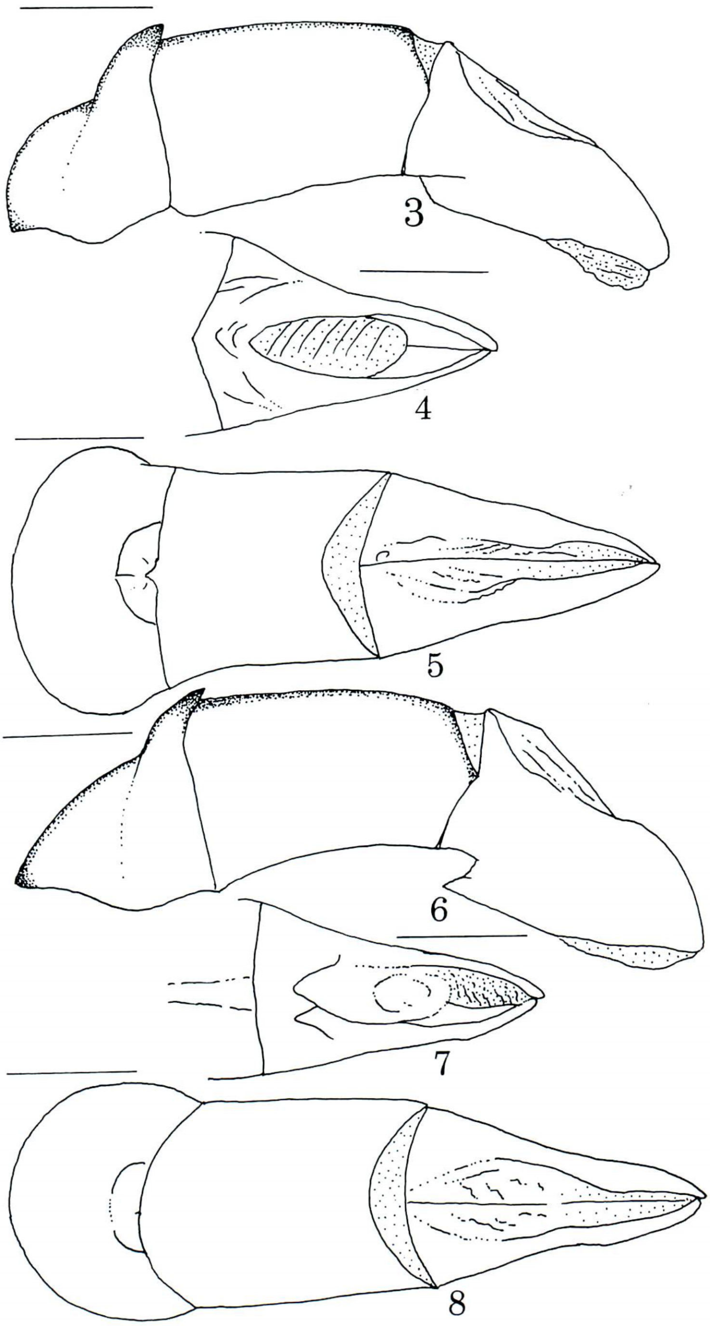
This new species is also somewhat similar to *S. dickinsoni* HAMBOOSONG and MASUMOTO from Thailand, but is easily distinguished from the latte by the following characters: 1) strial punctures of elytra are strong, obviously defined and rather close, whereas in *S. dickinsoni*, those are distinctly small and very sparse; 2) elytra with intervals are weakly shining, irregularly and longitudinally micro-wrinkled or micro-sculptured, whereas in *S. dickinsoni*, those are subopaque, strongly micro-granulose; 3) pronotum is sparsely to rather sparsely covered with strong punctures in the middle, whereas in *S. dickinsoni*, it is scarecely punctate in the middle.

Synapsis punctatus sp. nov.

(Figs. 2, 6–8)

Length: 21.1 mm; width; 12.0 mm (n = 1).

Body generally small-sized, broadly oval, not so strongly convex above; dorsal surface almost subopaque though weakly shining, entirely glabrous except for anterior margin of head



Figs. 3–8. *Synapsis* spp., aedeagi, scale 1 mm. —— 3–5, *S. roslihashimi* sp. nov.; 3, aedeagus, lateral view; 4, apex of paramere, ventral view; 5, aedeagus, dorsal view. —— 6–8, *S. punctatus* sp. nov.; 6, aedeagus, lateral view; 7, apex of paramere, ventral view; 8, aedeagus, dorsal view.

which is spraely clothed with reflexed short hairs; ventral surface opaque to weakly shining, partly clothed with brown hairs; metasternum and abdominal sternites glabrous. Color uniformly black, with mouth parts and palpi reddish brown; antennae with antennal foot-stalks reddish brown, club segments dark reddish brown.

Male. Head widely transverse and somewhat semicircular in front alike in the preceding species; clypeus deeply incised in the middle, with either side of the incision obviously reflexed and roundly lobed; clypeal margin reflexed and broadly bordered, sinuous on each side of the lobes; genal sutures finely and distinctly defined; each gena less strongly produced laterad than in *S. birmanicus*, with genal corner only slightly acute than right angle though a little obtuse than in *S. birmanicus*; genal margin straight in front and sinuate behind; ocular canthus more clearly developed than in *S. birmanicus*, occupying a little over a half length of eye; frons weakly raised at the middle, but not developed as a distinct swelling; vertex only slightly and transversely depressed at the middle; surface shining in front and subopaque behind, with clypeus and frons somewhat sparsely and transversely wrinkled or sculptured in front, sparsely granulate in the middle and densely so behind, genae densely granulate though sparsely so along anterior margin and smooth near eye, vertex almost impunctate in the middle and densely and strongly punctate laterad.

Pronotum moderately convex, distinctly transverse, about 1.9 times as wide as long (n = 1), with a fine shallow longitudinal depression along midline; anterior margin weakly bi-sinuate, broadly bordered, with lateral portion simply formed, almost straight; lateral margins weakly sinuate behind and gently rounded in middle, with marginal line fine from base to middle; anterior angles obliquely and briefly truncate, with antero-lateral portion slightly produced and almost right-angled, post-lateral portion slightly protrudent laterad and rounded; posterior angles rounded; base obtusely angled in the middle, with marginal line incomplete, irregularly and intermittently bordered; disc entirely simply formed; the lateral carina joined with lateral margin in front and behind; surface weakly shining in the middle, micro-granulose on marginal portions, densely covered with fairly strong punctures in the middle except for narrow impunctate median portion along midline, the punctures changing into granules laterad.

Elytra slightly wider than long, about 1.1 times as wide as long (n = 1); disc moderately convex, each with ten striae, 1st to 7th striae extending from base to near apex between sutural margin and lateral costa, 8th to 10th also extending base to near apex between lateral costa and lateral margin, 1st and 10th, 2nd and 9th, 3rd and 6th, 4th and 5th, and 7th and 8th clearly joined at apex; all striae finely but rather strongly grooved, with fine ridges on both sides; strial punctures strong, clearly defined and partly fairly transverse, especially on 1st stria, slightly but distinctly notching either margin of intervals; intervals weakly convex, distinctly opaque except for slightly shining suture, irregularly and longitudinally micro-wrinkled or microsculptured, the microsculptures becoming rougher and stronger toward apex and sides; 7th interval longitudinally arranged with single longitudinal row of small granules along 7th stria.

Pygidium slightly convex, entirely mat, transversely and slightly wrinkled, rather densely covered with transverse punctures. Prothorax with anterior angles broadly and strongly excavated on the ventral side, the excavation ordinary, not fringed with long yellowish hairs. Metasternum longitudinally grooved along midline in basal half, the groove noticeably strong and deep, and also transversely and strongly excavated on either side of the groove at base; metasternal shield shining basally and weakly micro-granulose apically, glabrous, sparsely covered with fine punctures at base, the punctures becoming granulose toward apex; lateral portions distinctly micro-granulose, glabrous, and rather sparsely covered with oval granules. Abdomen with 2nd to 5th sternites subopaque, sparsely covered with fine granules in the middle, the granules becoming coarser and increasing in number laterad. Metafemora each with ventral side bearing a small blunt tooth at basal 3/7 or so on the posterior edge; medial irregular transverse carina very weak or visible, at most with only a few long reddish hairs; surface sparsely and finely punctate on anterior half, and very densely and coarsely punctate on posterior side. Protibiae rather narrower than in *S. birmanicus*, with strong three external teeth; 1st tooth slightly sharp and largest, 2nd clearly smaller than 1st, 3rd smallest; terminal spur sharp and strong, curved outward. Mesotibiae rather short, gradually dilaterd from base to each apex, with 4 external teeth (including apical tooth); the penultimate tooth the largest and placed at about basal 2/3; dorso-external side without distinct transverse carina. Metatibiae elongate, strongly dilated toward each apex; inner distal end simply edged; lateral margin with 6 to 7 external teeth (including apical tooth), the penultimate tooth the largest, placed at apical 3/11; dorsal side somewhat densely arranged with a longitudinal row of long hairs in whole length.

Aedeagus relatively large and robust, about 5.5 mm in total length. Phallobase about 3.5 mm in length in lateral view, about 1.3 mm in apical width in dorsal view, with a strongly raised and transverse swelling on the middle of basal suture dorsally, whose anterior portion is distinctly carinate. Parameres about 2.0 mm in length in lateral view, with dorsal lobes strongly raised above in lateral view, dorsal membrane distinct, broader than the preceding species; ventral side with membranes narrow, basal median portion produced backward.

Female. unknown.

Holotype: ♂, Chudo Rozi, N. E. Kachin, Myanmar, VII. 2005.

Type depository. The holotype will be deposited in the National Museum of Nature and Science, Tokyo (NSMT).

Distribution. Myanmar.

Etymology. The specific name is taken after its characteristic strong punctures in the middle of pronotum.

Notes. The present new species is somewhat similar to *Synapsis birmanicus* GILLET from Myanmar, but is clearly distinguished from the latter by the following characters: 1) prothorax with anterior angles are ordinary on the ventral side and strongly excavated, but the excavation is not fringed with dense long hairs; 2) elytra with strial punctures are strong, clearly defined and partly fairly transverse, especially on 1st stria, and slightly but distinctly notch either margin of intervals, whereas in *S. birmanicus*, they are very weak and indefinite, scarcely notching either margin of intervals; 3) pronotum is densely and fairly strongly punctate in the middle, whereas in *S. birmanicus*, it is rather sparsely and finely punctate; 4) elytral intervals are weakly convex, distinctly to strongly micro-wrinkled or microsculptured, whereas in *S. birmanicus*, they are distinctly flat, weakly micro-wrinkled or microsculptured; 5); elytra with 7th interval is longitudinally arranged with a single longitudinal row of small granules along 7th stria, whereas in *S. birmanicus*, it is ordinary, without a single longitudinal row of small granules along 7th stria; 6) each gena of head is less strongly produced laterad, with genal corner slightly obtuse than in *S. birmanicus*.

Synapsis cambeforti poringensis subsp. nov.

The present new subspecies is different from the nominotypical one, described from Brunei, the lowland of Borneo, in the following characters: 1) body is generally clearly larger; 2) gena of head is fairly strongly produced laterad as an elongate process even in smaller individuals, and the apex is mostly obliquely truncate or subtruncate in moderate- to large-sized individuals, whereas in the nominotypical subspecies, it is clearly short and not strongly produced laterad as an elongate process, and the apex is distinctly rounded; 3) pronotum bears lateral portion of anterior margin strongly sinuous, whereas in the nominotypical one, it is slightly sinuous; 4) anterior angle of pronotum is distinctly produced and rectangular, whereas in the nominotypical one, it is distinctly more obtuse than right angle.

Length: 24.0–28.2 mm; width: 12.2–15.3 mm (n = 47)

Type series. Holotype: ♂, Poring (1,200 m alt.), Sabah, East Malaysia, 12. IV. 1995, T. KIKUTA leg. Paratypes: 6♂♂, 11♀♀, the same data as the holotype; 6♂♂, 5♀♀, ditto, 13. IV. 1995; 3♂♂, 1♀, ditto, 17. III. 1995; 6♂♂, 5♀♀, ditto, 16. I. 1997; 1♂, Sayap (1,000 m alt.), Sabah, East Malaysia, 25. III. 1995; 1♂, Tahubang (1,200 m alt.), Sabah, East Malaysia, 19. IV. 1995; 1♀, Keningau (1,200 m alt.), Crocker Range, Sabah, East Malaysia, IV. 1995.

Type depository. The holotype will be deposited in the collection of the Institute for Tropical Biology and Conservation, University of Malaysia Sabah.

Distribution. Sabah, Borneo.

Etymology. This species is named after the type locality of this species, Poring, Sabah, Borneo.

Notes. *Synapsis cambeforti* was described by KRIKKEN (1987) from Borneo. According to KRIKKEN (1987), the holotype and three paratypes of this species were from Brunei and some paratypes from Poring, Sabah, Malaysia. Based on our scrutiny on *Synapsis cambeforti* specimens in our hands, however, we consider that specimens from lower mountainous areas are subspecifically differentiated from those from lowlands.

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要　　約

越智 輝雄・近　雅博・河原 正和：*Synapsis* 属2新種及び1新亜種の記載. ——マレー半島及びミャンマーから *Synapsis* 属の2新種を記載した. 2種共に *S. birmanicus* GILLET に近縁で, それぞれ *S. roslihashimi* sp. nov. 及び *S. punctatus* sp. nov. と命名した. さらに, ボルネオ北部から *S. cambeforti* の亜種 *S. cambeforti poringensis* subsp. nov. を記載した.

References

BALTHASAR, V., 1963. Monographie der Scarabaeidae und Aphodiidae der palaearktischen und orientalischen Region, Coleoptera: Lamellicornia, Band **2**: 1–628. Tschekoslowakischen Akademie der Wissenschaften, Prag.

GILLET, A., 1907. Remarques sue quelques Coprides du Museo Civ. De Gênes (etc.). *Annali del Museo Civico di Storia Naturale Genova*, **43**: 587–603.

HANBONNSONG Y. & K. MASUMOTO, 1999. Dung Beetles (Coleoptera, Scarabaeidae) of Thailand, Part 1 Genus *Synapsis*. *Elytra, Tokyo*, **27**: 453–462.

KRAJCIK, M., 2006. Check List of Scarabaeoidae of the World, 1. Scarabaeinae (Coleoptera: Scarabaeidae: Scarabaeinae). Anima. X, Supplement 3, Plzen: 1–190.

KRIKKEN, J., 1987. A New Species of the Dung Beetle Genus *Synapsis* BATES from Borneo, with Notes on its Relatives (Coleoptera, Scarabaeidae). *Zoologische Medelingen*, **61** (1987): 319–325.

OCHI, T. & M. KON, 2007. A new species of the genus *Synapsis* (Coleoptera, Scarabaeidae)from Laos. *Elytra, Tokyo*, **35**: 91–95.

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   Blackwelder, R. E., 1952. The generic names of the beetle family Staphylinidae with an essay on genotypy. Bulletin of United States National Museum, **200**: i-iv+1–483.

   Müler, J., 1925. Terzo contributo alla conoscenza del genere Staphylinus L. Bollettino Societa entomologica Italiana, **57**: 40–48.
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